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Abstracts of Tuberculosis *will be published at intervals as an integral part of the* **American Review of Tuberculosis.** *It will receive separate paging and may, if desired, be bound separately at the completion of the volume.*

The Abstract Editor is Dr. George Mannheimer, 41 West 51st Street, New York City. Prompt transmission to him of reprints or abstracts of papers on tuberculosis, sanatorium or board of health reports, etc., will promote their early publication in this section.

Abstracts should be sent typewritten on one side of the page only. They should be as concise and compact as the subject matter of the article warrants. They should be headed with a short title, and followed by the full title of the paper, author's name, journal, date, volume and page

Correction: See p. 114, August, 1920, Review, Abstract Section.—Dr. Joseph Walsh has kindly called our attention to the fact that in the abstract, Classification of Pulmonary Tuberculosis, "(6) basal" should read "(6) obsolete."

Mortality from Tuberculosis in the United States, 1905-1919.—On the basis of an estimated population of 107,000,000 for the United States for the middle of 1920, it is reasonably probable that the number of deaths from pulmonary tuberculosis during the current year will reach 130,000 and from other forms of tuberculosis there will probably be 18,000 additional deaths. This estimate is based upon the average of the death rates of the registration area for the five years preceding 1919, which are sufficiently representative for the present purpose. There are no trustworthy data which would justify an estimate of the probable number of the living population infected with tuberculosis at the present time. It is merely conjecture to say that one case in ten terminates fatally, for clearly no one without a complete survey of the whole population is in a position to differentiate the infected element from those who are completely free from the tuberculosis taint. The number of such persons among our wage-earning population, however, must be enormous, and it probably is not going too far to say that one-tenth is potentially liable to fall a victim to the disease. For the United States the most useful data are the returns for large cities, with a population of approximately one-fourth of the total. The table be'ow shows gratifying changes in the death rates since 1905, or, dividing the twenty-year period into four five-year periods, from 198.9 per 100,000 of population during 1900–04, and to 181.5 during 1905–09, to 158.9 during 1910–14, and to 145.1 during 1915–19. This reduction has been achieved regardless of truly extraordinary social and economic differences arising out of the Great War, the increase in the cost of living, the increase in the congestion of the population due to the falling off in the building of new homes, and, very broadly speaking, in the deterioration of the food supply, particularly of children and young adults. The tuberculosis death rate, which had been steadily diminishing since 1905, reached the lowest point on record since that date in 1913. The increase since that year to the end of 1918 is, of course, primarily attributable to the far-reaching consequences of the Great War

But the wholly unexpected and material reduction in the rate during 1919, or from 153.2 in 1918 to only 121.7 in 1919, cannot be considered otherwise than as measuring in part the direct effect of concerted and more strenuous associated methods of treatment and control.

Mortality from tuberculosis of the lungs in American cities, 1900–1919, by five year periods. (*Rates per 100,000 of population.*)

YEARS	AGGREGATE POPULATION	DEATHS FROM TUBERCULOSIS OF THE LUNGS	RATE
1900–1904	75,370,704	149,894	198.9
1905–1909	87,649,584	159,097	181.5
1910–1914	101,046,152	160,525	158.9
1915–1919	112,522,258	163,224	145.1

The data for Great Britain are not yet available for 1919, but the table following, derived from an article by Mr. Knud Stouman, in the *International Journal of Public Health*, will prove useful for the present purpose:

Mortality from tuberculosis of the lungs in Great Britain, 1909–1918. (*Rates per 100,000 of population.*)

YEAR	ENGLAND AND WALES	IRELAND	SCOTLAND
1909	109.1	183.5	127.4
1910	101.5	171.6	114.1
1911	108.4	173.0	114.7
1912	104.7	170.0	111.9
1913	101.2	168.2	107.9
1909–1913	105.0	173.3	115.2
1914	104.0	163.5	103.6
1915	117.9	174.0	110.6
1916	120.4	168.1	106.3
1917	127.9	173.9	104.5
1918	137.6	172.5	106.8

The foregoing table is limited to pulmonary tuberculosis and shows that the death rate since 1914 for England and Wales increased 33.6 per 100,000 of population; for Ireland, 9.0, and for Scotland, 3.2. The decrease for American cities during 1914–1918 was 1.4 per 100,000 of population. Mr. Stouman gives the returns for twenty-six principal Italian cities, for which the pulmonary tuberculosis rate increased from 166 per 100,000 of population in 1914 to 255 in 1918, or 89.0 per 100,000.

For the city of Paris the returns are of exceptional interest in that they include the year 1919 and are for "other forms" of tuberculosis as well as pulmonary tuberculosis. The statistics for the last six years are shown in the table below:

Mortality from tuberculosis in the city of Paris, 1914–1919. (*Rates per 100,000 of population.*)

YEAR	PULMONARY	OTHER FORMS	YEAR	PULMONARY	OTHER FORMS
1914	9391	1518	1917	8424	1559
1915	9070	1544	1918	8338	1334
1916	8756	1501	1919	7090	1352

This table is in curious contrast in that the mortality from pulmonary tuberculosis is shown to have actually decreased every year since 1914, or from 9391 deaths in 1914 to 7090 in 1919. A similar reduction occurred in the mortality from other forms of tuberculosis, or from 1518 deaths in 1914 to 1352 in 1919. How far this actual reduction is to be attributed to a diminution in the population as the effect of the war cannot at present be stated.

International statistics of tuberculosis require to be used with extreme caution. No explanation, for illustration, has been forthcoming as to why the pulmonary tuberculosis death rate of the United States should be persistently above the corresponding rate for England and Wales, nor, conversely, why the mortality from bronchitis should be approximately more than five times as common in England as in this country.[1] How far this is a question of accuracy in diagnosis does not fall within the present discussion but it may be said that there has always been a lamentable indifference to precise accuracy in the diagnosis of industrial lung disease, probably not tuberculous in many cases, where lung fibrosis prevails primarily as in the case of quartz miners and granite stone cutters. The danger of generalizing from such data was forcibly illustrated by the original report by Dr. Hermann M. Biggs, on the extent of tuberculosis in the French army, given as 86,000 affected soldiers in December, 1915, and estimated for February, 1917, as 150,000, although subsequent investigations fortunately proved a very much lesser degree of prevalence than was originally implied by statistics of an apparent degree of intrinsic trustworthiness

[1] Male rate 20.9, for the United States, against 106.1 for England and Wales (1908–12).

Mortality from tuberculosis of the lungs in American cities, 1910-1919 (rates per 100,000 of population)

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
Atlanta, Ga.	263.7	244.9	269.1	214.1	239.4	238.7	233.1	167.0	175.3	162.9	182.1	173.8	132.9	140.0	120.1	115.9	122.3	118.8	111.8	102.0
Baltimore, Md	235.4	238.5	222.2	225.6	255.6	233.7	241.9	238.8	226.9	228.7	228.5	208.0	205.9	195.4	187.4	177.2	178.1	184.7	190.5	143.7
Birmingham, Ala.	.....	.....	.....	.....	.....	.....	.....	.....	211.6	237.4	278.1	223.0	195.3	211.1	232.6	199.4	197.5	199.3	183.3	143.3
Boston, Mass.	249.6	234.4	212.3	205.1	215.8	200.7	195.6	182.9	169.6	158.5	172.5	154.9	158.0	151.5	146.7	144.8	153.0	157.7	165.1	139.0
Bridgeport, Conn.	186.6	225.8	162.5	164.8	182.5	192.0	160.9	175.8	146.2	141.6	179.3	108.3	85.2	82.2	95.4	116.6	113.6	146.8	139.3	137.3
Buffalo, N. Y.	113.2	126.8	117.6	122.0	135.7	129.7	125.2	123.5	127.4	127.4	124.6	122.7	123.1	133.8	142.1	137.0	141.4	150.0	153.6	105.1
Cambridge, Mass.	248.1	222.6	198.7	174.3	196.2	180.2	169.4	235.4	264.3	271.1	246.1	169.0	179.6	189.2	173.4	190.4	181.2	191.5	205.5	161.5
Chicago, Ill.	165.4	147.9	148.2	160.1	166.8	166.2	162.4	171.5	163.0	155.9	159.0	148.1	145.4	135.8	146.4	152.9	132.9	133.2	128.8	105.5
Cleveland, Ohio.	126.9	106.5	114.4	127.2	137.5	117.2	118.8	125.3	119.0	109.7	127.9	128.5	113.3	112.6	113.6	111.1	126.9	144.5	144.6	108.8
Columbus, Ohio.	208.8	203.5	191.2	209.7	204.9	189.0	198.7	181.5	172.0	155.3	178.5	159.3	146.4	138.3	137.9	132.4	125.2	137.9	139.4	107.1
Dayton, Ohio.	170.9	193.4	181.2	183.6	190.6	191.4	204.3	181.6	186.8	191.1	162.1	141.3	129.0	140.9	114.1	141.3	111.6	129.7	128.4	90.6
Denver, Col.	373.4	378.7	373.9	366.1	396.2	386.5	370.5	354.2	365.5	341.8	303.7	275.6	281.6	257.2	257.2	253.8	217.0	245.2	312.8	246.0
Detroit, Mich.	113.1	110.3	115.7	107.6	118.1	102.0	107.3	97.4	91.3	86.1	99.8	93.9	87.5	82.2	80.2	90.2	104.1	102.0	109.1	80.2
Fall River, Mass.	184.4	154.2	173.9	184.1	212.2	146.9	134.9	156.7	131.1	129.8	142.5	139.8	128.8	132.9	153.6	120.1	172.5	155.7	189.6	111.3
Grand Rapids, Mich.	93.6	96.0	100.4	114.2	120.9	74.9	82.6	93.7	76.3	86.1	102.2	87.8	77.4	55.0	68.5	85.5	65.0	80.7	86.7	53.3
Indianapolis, Ind.	220.5	180.1	165.4	188.3	210.8	170.4	172.7	203.4	193.9	182.0	179.8	153.1	151.7	179.2	171.5	168.7	156.0	155.5	150.6	117.9
Jersey City, N. J.	251.4	217.8	208.4	228.2	259.4	202.7	228.3	234.6	209.9	169.0	177.0	169.9	146.5	138.7	146.5	153.5	153.9	145.8	136.7	109.5
Los Angeles, Cal.	357.1	321.1	300.1	361.8	280.1	312.0	299.4	288.3	230.7	226.3	232.8	247.4	234.6	243.1	209.1	201.9	188.6	192.9	206.6	176.2
Louisville, Ky.	206.9	198.4	185.9	218.9	246.5	236.5	210.0	202.7	194.2	196.0	222.8	212.9	186.2	165.0	190.5	171.3	165.7	160.6	191.2	142.0
Lowell, Mass.	192.7	166.4	164.3	135.9	141.2	153.3	153.4	152.9	121.2	119.6	112.9	116.9	119.0	91.5	97.5	104.2	106.4	136.5	143.8	87.6
Memphis, Tenn.	242.1	223.0	259.3	190.2	235.2	251.7	216.9	206.8	223.9	231.9	250.9	218.3	225.0	242.7	272.3	261.0	236.2	241.9	260.1	162.0
Milwaukee, Wis.	138.4	133.9	102.1	127.6	141.4	133.5	130.3	114.3	110.7	100.6	116.1	100.5	87.6	92.3	96.0	86.2	81.2	87.5	88.1	70.2
Minneapolis, Minn.	128.3	120.2	106.4	118.8	103.5	92.9	101.6	103.6	107.0	123.0	121.8	134.5	119.5	119.0	117.1	128.8	122.7	124.7	116.8	103.1
Nashville, Tenn.	346.0	266.6	311.0	246.2	346.9	324.9	283.8	244.5	212.0	193.3	212.0	203.3	194.7	175.6	204.3	204.6	155.4	180.3	203.9	150.6
Newark, N. J.	250.7	227.8	225.9	244.2	248.0	240.2	247.7	231.7	208.7	191.7	215.3	184.3	152.3	154.7	163.3	168.5	153.2	155.1	135.6	135.0
New Haven, Conn.	187.5	192.2	186.0	162.9	161.0	154.3	160.0	186.0	145.0	175.6	147.4	123.8	101.9	112.5	110.3	88.5	94.8	124.9	121.9	65.2
New Orleans, La.	342.2	305.0	323.8	314.8	335.1	312.2	276.4	298.7	260.3	219.2	266.9	242.8	245.7	235.9	272.6	267.3	261.6	291.8	288.0	212.2
New York, N. Y.	241.9	228.8	207.8	211.6	220.4	210.4	214.0	205.8	196.6	185.6	186.3	184.8	177.8	176.0	180.2	176.0	164.4	170.6	164.2	133.6
Oakland, Cal.	192.9	217.0	171.4	140.0	109.0	112.3	175.5	201.7	144.8	155.3	127.2	104.6	118.1	110.0	104.7	117.3	98.5	93.6	98.0	134.4
Paterson, N. J.	206.3	183.2	176.4	169.7	208.6	176.3	204.1	152.3	135.4	153.3	164.0	172.2	118.3	136.8	118.0	127.0	138.1	131.8	144.2	100.1
Philadelphia, Pa.	217.9	210.9	198.4	216.2	230.4	203.4	225.1	220.8	201.7	189.0	194.1	194.0	170.5	165.0	167.6	164.1	170.2	174.3	191.8	143.8
Pittsburgh, Pa.	120.5	129.2	131.0	136.9	149.5	149.1	126.2	112.4	114.2	109.0	104.5	106.6	101.5	108.0	111.0	110.5	113.2	131.7	138.2	109.3
Portland, Ore.	113.9	116.9	103.3	105.8	102.0	89.2	80.7	91.8	91.4	81.7	84.0	88.1	76.8	71.4	70.3	78.6	72.3	63.4	82.2	67.1
Providence, R. I.	236.3	217.5	213.2	214.3	187.6	169.8	163.4	156.5	151.7	137.2	154.2	132.0	115.2	129.1	121.6	125.6	134.1	140.1	128.0	121.6
Richmond, Va.	307.6	248.4	253.7	259.8	263.6	222.7	266.5	238.9	194.3	209.2	224.1	209.7	212.2	169.7	188.3	175.2	187.0	162.6	185.4	153.6
Rochester, N. Y.	143.9	149.2	110.6	125.6	140.5	147.3	142.1	125.6	132.8	135.7	138.0	112.0	94.1	95.3	89.5	98.1	89.9	92.1	97.0	69.4
San Francisco, Cal.	283.6	289.5	278.7	281.5	265.1	264.1	176.3	175.5	179.7	166.9	185.7	158.4	161.3	161.6	178.2	177.2	166.4	157.4	169.6	151.8
Scranton, Pa.	98.8	91.5	86.4	99.7	103.5	89.8	71.9	81.7	80.0	84.6	90.9	101.8	78.4	80.2	81.2	77.7	81.0	76.8	89.6	67.2
Seattle, Wash.	110.2	106.8	98.4	90.9	94.1	71.3	64.7	79.1	79.3	88.1	96.1	95.1	85.4	81.7	77.8	58.6	67.5	71.5	66.7	63.0
Spokane, Wash.	109.7	119.3	118.4	132.0	105.9	91.9	95.0	92.6	103.0	87.5	90.0	92.0	65.2	83.4	70.0	70.0	58.5	72.9	61.4	47.0
St. Louis, Mo.	187.1	192.3	181.4	187.2	231.7	222.5	195.2	172.4	170.2	177.0	167.2	137.3	138.2	140.6	147.6	131.6	132.3	142.9	129.1	92.1
St. Paul, Minn.	120.8	120.7	104.7	94.3	105.7	112.5	100.0	121.7	92.7	106.2	111.3	113.0	107.9	121.9	120.8	114.4	108.1	126.4	115.8	103.2
Syracuse, N. Y.	157.8	158.9	118.0	131.1	146.5	120.0	120.2	118.7	119.3	111.1	93.3	96.7	89.5	99.6	106.6	84.8	86.8	88.0	92.9	49.9
Washington, D. C.	292.7	295.3	245.0	264.7	277.3	272.2	251.5	242.8	221.4	229.4	234.4	215.4	213.1	198.4	171.8	186.3	172.7	154.4	161.7	131.9
Worcester, Mass.	206.0	191.9	165.2	170.6	168.0	170.9	154.2	149.3	149.8	118.1	104.1	115.8	107.8	104.6	119.2	114.6	133.5	129.4	122.0	95.5
Average	209.8	199.4	187.5	193.7	204.4	192.5	189.5	185.8	174.7	167.3	172.2	162.9	154.1	151.6	154.6	152.5	147.0	152.0	153.2	121.7

The present investigation, limited to forty-five American cities, will facilitate the practical use of available data, the details being given for each year since 1900 and in a consolidated form by five-year periods. The suggestions regarding the necessity of caution in the use of international tuberculosis statistics apply, though in a lesser degree, to a comparison of individual cities. It is always best to limit the comparison to the city itself, for its own record for a given period of time is most useful for practical purposes. It is very easy to draw false conclusions from comparative statistics not standardized on account of wide variations in the age and sex distribution and the occupational activities of the population concerned. It is safe to assume, however, for illustration, that the low figure for the city of Spokane, Washington, is in conformity to the facts of a decidedly low rate of local frequency occurrence, due to causes as yet but imperfectly understood. In this connection attention may be directed to the truly admirable local provision for the treatment of the disease at the Edgecliff sanatorium, which reflects the health progress of the community as well as the sanitary and humane ideals of its citizenship. —*Mortality from Tuberculosis, 1905–1919, F. L. Hoffman, The Spectator, Life Insurance Section, September 23 and 30, 1920.*

	1900 –04	1905 –09	1910 –14	1915 –19
Atlanta, Ga	245.5	193.7	148.9	114.0
Baltimore, Md.	235.5	233.9	204.5	174.5
Birmingham, Ala.	.....	.....	227.4	183.8
Boston, Mass	223.2	180.9	156.6	151.9
Bridgeport, Conn.	183.9	162.5	108.6	129.0
Buffalo, N. Y.	123.2	126.6	129.5	137.3
Cambridge, Mass.	207.6	224.9	191.4	186.0
Chicago, Ill.	157.8	163.7	146.8	130.3
Cleveland, Ohio	122.8	117.9	118.8	126.3
Columbus, Ohio	203.6	178.7	151.5	128.2
Dayton, Ohio	184.0	191.0	136.9	119.9
Denver, Col.	378.0	363.0	274.6	255.2
Detroit, Mich.	113.0	96.2	88.3	96.9
Fall River, Mass.	181.8	139.7	139.5	149.8
Grand Rapids, Mich	105.4	82.8	77.7	74.1
Indianapolis, Ind.	192.8	184.7	167.1	149.2
Jersey City, N. J.	233.2	208.4	155.5	139.7
Los Angeles, Cal.	320.8	267.2	232.7	192.9
Louisville, Ky.	211.5	207.7	195.4	166.1
Lowell, Mass	160.1	139.6	107.5	115.7
Memphis, Tenn	229.8	226.2	242.1	231.5
Milwaukee, Wis.	128.7	117.3	98.3	82.5
Minneapolis, Minn	114.9	106.0	122.2	119.0
Nashville, Tenn.	303.2	246.9	197.9	178.9
Newark, N. J.	239.4	222.8	173.5	149.2
New Haven, Conn.	177.6	164.3	118.8	99.0
New Orleans, La.	324.2	272.7	252.8	264.0
New York, N. Y.	221.7	202.0	181.0	161.5
Oakland, Cal.	162.7	158.5	112.6	108.6
Paterson, N. J.	188.8	163.7	141.6	128.2
Philadelphia, Pa.	214.9	207.8	178.0	168.8
Pittsburgh, Pa.	133.7	120.6	106.4	120.6
Portland, Ore.	107.7	86.9	77.9	72.7
Providence, R. I.	213.3	155.3	130.1	129.8
Richmond, Va.	266.4	224.8	200.5	172.7
Rochester, N. Y.	133.8	136.4	105.0	89.0
San Francisco, Cal.	279.5	191.8	169.0	164.3
Scranton, Pa.	96.1	81.6	86.4	78.4
Seattle, Wash.	99.0	77.7	86.9	65.5
Spokane, Wash.	117.2	94.0	80.1	62.0
St. Louis, Mo.	196.3	187.1	146.1	125.4
St. Paul, Minn.	108.8	106.6	115.0	113.5
Syracuse, N. Y.	142.3	117.8	97.3	80.2
Washington, D. C.	274.8	243.1	205.8	160.8
Worcester, Mass.	180.0	147.9	110.4	118.8
Average	198.9	181.5	158.9	145.1

Modern Outlook on the Treatment of Tuberculosis.—Philip discusses the general status of the tuberculosis problem at the present time and the outlook for the future. He comments particularly upon the present hopeful attitude considering the curability of tuberculosis as shown by the fact that more persons recover than ultimately die from this disease. The traditional portraiture of phthisis by Hippocrates and later masters in clinical medicine has so commanded attention as in some ways to constitute a bar to the recognition of the early stages of this disease. He objects, and rightly, to the term "pre-tuberculous." He likewise calls attention to the striking analogy between tuberculosis and syphilis. The primary lesion in tuberculosis is often impossible to find owing to the fact that the bacillus passes through the normal, healthy mucous membrane, leaving no trace. Following this, there succeeds a period of latency, again followed by lymphatic involvement. He emphasizes the importance of systemic intoxication in the diagnosis of this condition. In the future, there will not only be a decrease in the death rate, but also a lessened morbidity.—*Modern Outlook on the Treatment of Tuberculosis, R. Philip, Edin. M. J., July 1920, xxv, No. 1.*

Deaths and Death Rates from Pulmonary Tuberculosis in New York City and State.—The following tables, showing the deaths and death rates from pulmonary tuberculosis for New York City and State, for June and July, during the years 1913 to 1920, inclusive, are taken from the *Monthly Vital Statistics Review, New York State Department of Health, August and September, 1920, New Series, vol. i, nos. 6 and 7.*

Pulmonary tuberculosis: Deaths and death rates, New York State and large subdivisions, June, 1913 to 1920*

MONTH	YEAR	NEW YORK STATE		NEW YORK CITY		REST OF STATE							
						Total		Urban		Rural		Institutional districts	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
June...	1913–17	1,183	142.3	699	155.5	484	126.9	241	130.2	243	123.8	.....	.....
June...	1913	1,146	143.4	662	154.9	484	130.1	232	128.1	252	132.7	.....	.....
June...	1914	1,222	149.8	712	162.8	510	135.7	230	124.4	280	147.1	.....	.....
June...	1915	1,170	140.8	705	156.9	465	121.9	248	134.0	217	110.5	.....	.....
June...	1916	1,157	137.0	697	151.7	460	119.5	229	122.2	231	116.9	.....	.....
June...	1917	1,219	141.4	719	152.9	500	128.4	267	140.1	233	116.5	.....	.....
June...	1918	1,149	131.2	654	135.9	495	125.6	232	119.5	227	112.9	36	.....
June...	1919	1,073	120.1	621	126.1	452	113.3	186	94.0	221	109.3	45	.....
June...	**1920**	**903**	**99.6**	**494**	**98.2**	**409**	**101.4**	**144**	**72.0**	**227**	**111.5**	**38**	.....

* Deaths per 100,000 population per annum.

Data from New York State Health Department Annual Reports and Monthly Bulletins, or specially computed.

Pulmonary Tuberculosis: Deaths and death rates, New York State and large subdivisions, July, 1913 to 1920

MONTH	YEAR	NEW YORK STATE		NEW YORK CITY		REST OF STATE							
						Total		Urban		Rural		Institutional districts	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
July....	1913–17	1,084	126.3	664	143.0	420	106.6	202	105.6	218	107.4	.....	.....
July....	1913	1,069	129.3	660	149.5	409	106.4	199	106.4	210	107.0	.....	.....
July....	1914	1,101	130.7	668	147.9	433	111.5	192	100.5	241	122.5	.....	.....
July....	1915	1,103	128.4	702	151.1	401	101.7	206	107.7	195	96.1	.....	.....
July....	1916	1,007	115.4	604	127.2	403	101.3	207	106.9	196	96.0	.....	.....
July....	1917	1,140	127.9	684	140.7	456	113.2	208	105.6	248	120.0	.....	.....
July....	1918	1,015	112.2	606	121.7	409	100.3	175	87.2	191	91.9	43	.....
July....	1919	995	107.8	590	115.9	405	98.2	148	72.4	215	102.9	42	.....
July....	**1920**	**828**	**88.3**	**479**	**92.0**	**349**	**83.7**	**127**	**61.4**	**184**	**87.5**	**38**	.....

Coöperative Tuberculosis Work in Italy.—Because of the sudden need of soldiers in France in 1914, it was impossible to separate tuberculous soldiers from the rest. There was also little room in the hospitals for the tuberculous soldier. The result was that the American Red Cross and the Rockefeller Foundation came to the rescue by sending commissions to coöperate. In time these commissions reached Italy. The members of the commission had to study the foreign languages and problems such as housing, child welfare, and child labor. Nineteen towns ranging from Naples to Piperro were selected for the work. In every case the prerequisite was an Italian committee of volunteers which was willing to coöperate. Each locality was carefully studied and plans for hospitals, open-air schools and teaching of general hygiene were formulated and adopted. There are many interesting pieces of work going on in Italy. Northern Italy has kept pace with other countries, but southern Italy needs roads, railroads, aqueducts, houses, water power, instalment of drainage and planting of trees. Above all, southern Italy needs new and better schools. Italy cannot at present better conditions without the help of America and England. This is a splendid chance for a step toward international cooperation.—*Coöperative Tuberculosis Work in Italy, W. C. White, Tubercle, September, 1920, i, 550.*

Public Health Training Course in Tuberculosis.—The United States Public Health Service, which for some time has been making special efforts to facilitate the diagnosis of tuberculosis and especially to bring about its recognition in its very earliest stages, has recently opened mobile training courses for the purpose in Illinois, Wisconsin, Michigan, and Washington. Similar courses have already been given in Texas, Louisiana, Missouri, Virginia, West Virginia, Maryland, and Pennsylvania. These courses, which last seven days and are very intensive, are at present open only to physicians attached to the Public Health Service; but after all of these in the various States have completed the course it is hoped that it may be possible to hold similar courses for the benefit of other physicians who may desire to attend. The instruction is given by recognized experts in the diagnosis of pulmonary tuberculosis, and is supplemented by the showing of a remarkable motion picture, in six reels, which minutely illustrates every phase of the disease.—*From Health News, issued by the U. S. Public Health Service.*

A Plea for a Tuberculosis Department in Medical Schools.—Massachusetts spends $3,000,000 annually for the care of tuberculous patients, but there is a widespread feeling that the government is not getting a satisfactory return on the money expended in its efforts to stamp out pulmonary tuberculosis. The best minds in tuberculosis work place the failure to secure better results upon the delay or inability of the general practitioner to recognize the signs and symptoms of early pulmonary tuberculosis. Hawes says that in the majority of our leading medical schools the subject of tuberculosis receives scant attention. With an early diagnosis 60 to 80 per cent of the cases could recover. With this fact in view, it is not surprising that a plea for the creation of a tuberculosis department in the medical schools is made. The general practitioner is our first line of defense in all invading illness. For men who are now engaged in general practice, the Department of Public Health proposes a series of consultation clinics in pulmonary tuberculosis. These clinics will be conducted by physicians attached to the state sanatoria and the family physician will be able, without price, to obtain expert diagnosis in his tuberculosis case. In addition to this, it is planned to demonstrate the case in detail to the family physician. History taking, methods of making physical examinations, interpretation of physical signs as well as interpretation of the symptoms revealed by the history of the case will be thoroughly discussed.—*A Plea for a Department of Tuberculosis in Medical Schools, W. J. Gallivan, Boston M. & S. J., September 16, 1920, clxxxiii, 348.*

Nutrition Clinics and Tuberculosis.—Nutrition classes have been carried on with children at the out-patient department of the Boston Consumptives' Hospital. The aim has been to get these children well in their own homes by means of instruction in these classes. The problem of tuberculosis is for the most part one of nutrition. If children can be made well in a sanatorium, they get health; but if they can be made well in their own homes, they get health, plus health education, plus character. Nutrition work, which covers a new and hitherto neglected field in medical work, must be carried on with proper authority. It cannot fit in as an adjunct to other programs, but other programs must be adjusted to fit the problem of tuberculosis. It was shown in the work during the year that children cannot only be made to come up to the normal rate of gain but double it even under discouraging circumstances. With the proper

coöperation of the four factors that safeguard the child's health, namely, the home, the medical work, the child's own interest and the school, all these children should rapidly be brought up to normal health. To bring sick children up to normal health is an opportunity for rehabilitating the whole family and adjusting it to its proper relation in the community.—*Nutrition Clinics and Tuberculosis, W. R. P. Emerson, Boston M. & S. J., September 16, 1920, clxxxiii, 361.*

Disposition of Tuberculosis in Industrial Organizations.—The three main problems in dealing with industrial tuberculosis are: (1) The elimination of tuberculosis from the organization by medical examination of all applicants and periodic reëxaminations of employees. (2) The protection of others against infection by the usual accepted methods. (3) The care and disposition of tuberculous employees, the objects in view being: a. To secure recovery and return to work. b. Failing in that, to rehabilitate as far as possible and secure proper living conditions. c. To care for advanced cases. An attempt has been made to set forth the following: (1) That where possible, a standard method of procedure should be adopted in caring for cases of tuberculosis in industry. (2) That the procedure should be adapted to the needs of lay executives and based on economic progress. (3) That cases in the earliest stages, including those only suspected of having the disease, should be constantly sought for and at once put under treatment in rest homes with a view to early and permanent recovery. (4) That such cases should not be stigmatized as having tuberculosis. (5) That many cases in which the economic prognosis is poor, are cared for better and more cheaply at their homes than in institutions.—*Disposition of Tuberculosis in Industrial Organizations, J. S. Billings, J. Industr. Hyg., July, 1920, ii, 90.*

Tuberculosis Control amongst Herds in Pennsylvania.—To eradicate bovine tuberculosis it is necessary to remove all diseased animals from an infected herd. This can be accomplished most thoroughly by the combined tuberculin tests, namely the subcutaneous, conjunctival and intracutaneous, in preference to the subcutaneous test alone. As a concrete example, a herd of 100 cattle was tested by the subcutaneous method, when 39 reacted and 13 were suspicious. The balance of the herd including calves and suspects, or a total of 74 animals, were retested by the combined method. The 13 suspects reacted, as well as 21 others that were negative to the initial test. All but 4 were slaughtered and all showed lesions. Before adding any new cattle to the herd, these should be isolated and subjected to at least 2 successful tuberculin tests to prevent infecting the healthy herd. The records for the past five years show an average of 9 per cent reacting as compared to 17 per cent for a similar period at the beginning of the Board's existence. The accredited plan of the State also includes disinfection of infected premises, isolation of added cattle until two successful tests have been passed, enforcement of rules regarding sanitation, attention to the calves, etc. In other words, herds are freed in the shortest possible time, and after they become healthy every precaution is taken to keep them healthy.—*Tuberculosis Control in Pennsylvania, S. E. Bruner, J. A. Vet. Med. Ass., September, 1920, lvii, 705.*

Osler's Work in Tuberculosis.—An account of the great physician's interest and activities in tuberculosis and a bibliography of his contributions to the subject. Much of this has already appeared in the REVIEW, February, 1920, iii, 745.—*Tuberculosis and the Life and Work of Sir William Osler, S. A. Knopf, Brit. J. Tuberc., July,* 1920, *xiv,* 97.

Preventorium for Vermont.—Vermont is to have a new preventorium. On March last, the sum of $50,000 and 25 acres of land were offered the Vermont Tuberculosis Association for the erection of a much-needed preventorium for children by Mr. Redfield Proctor and his sister, Miss Emily Dutton Proctor. The donation was made on condition that the Association raise an equal amount of $50,000 for its general work, and that the new preventorium be a memorial to the late Dr. Charles S. Caverly. Following the offer, the Vermont Association conducted an intensive drive for funds, with the gratifying result that considerably more than the amount asked for was collected. The long-hoped-for preventorium is thus assured of becoming a reality in the near future.—*Bull. Nat. Tuberc. Ass., September, 1920, vi, 4.*

Massachusetts Tuberculosis Clinics.—The State Department of Public Health announces to the physicians of Massachusetts a series of consultation clinics in early pulmonary tuberculosis. These clinics will be conducted by the medical staffs of the State sanatoriums, and opportunity will be afforded the family physician to obtain, without fee, expert diagnosis in this type of pulmonary disease. Patients applying to these clinics must be accompanied by the

family physician, or present a letter from him giving the history of the case and requesting an opinion. These clinics will begin in September, 1920. Facilities for consultation are provided at each State sanatorium for every day of the week (Saturdays, Sundays and holidays excepted) between the hours of 2 and 5 o'clock. Attendance at these clinics is not restricted to the inhabitants of their own cities. Physicians are invited to make use of any clinic, it being inferred that they will select the one nearest their home city or town.—*From a circular letter from the Commissioner of Public Health to the physicians of Massachusetts, August 24, 1920.*

Putting the Ex-Consumptive Back on the Job.—The Federal Vocational Board and the National Tuberculosis Association are coöperating with the New York Tuberculosis Association in the management of a workshop and training school for the industrial rehabilitation of ex-service men convalescent from tuberculosis whose disease has reached the arrested stage. Later on, when the shop has become self-sustaining, others than ex-service men will be received. The shop is incorporated under the name of the Reco Manufacturing Company, Inc., and is located at 458 Pierce avenue, Long Island City, in a large, airy, well-lighted loft with lunch room and other conveniences. Medical care and treatment are at hand in any emergency. The object is to gradually and safely teach a trade that will not be injurious and, in which, after the men have learned to make marketable goods, they will be paid the same wages as others doing the same work. An opportunity is thus offered to learn one of the following skilled trades under instruction of experts, viz.: 1. Watch repairing. 2. Jewelry manufacturing (gold and platinum). 3. High class cabinet making. As soon as a man learns to make goods that can be sold or repairs that are paid for, he will receive the regular union wage for that particular kind of work. This training does not in itself affect any compensation he may be now receiving from the Government. This is a great chance, for the workshop can teach a trade that is well paid, and when a man learns it, he can maintain his health and support not only himself but also his family. The wages earned by cabinet makers, jewelers and watch repairers range between $40 and $75 per week. There is a great demand for skilled workers in all these trades throughout the United States. The workshop is now open. To apply for admission, men must come in person to the New York Tuberculosis Association, 10 East 39th Street, New York City (third floor). Many of the physicians in New York City have such ex-service men convalescent from tuberculosis under their care. If they feel that such work, as is described above, will be beneficial to their patients, they are urged to advise them to make application for admission to this training school.—*Weekly Bull., Dept. of Health, N. Y. City, September 4, 1920, ix, 283.*

The London Scheme for the Prevention of Tuberculosis.—Very little progress has been made in London in the treatment and prevention of tuberculosis, if we consider the financial outlay in the past years. Persons who do not come within the scope of the Poor Law have available for them sanatorium, dispensary, and domiciliary treatment. It is apparent that in this scheme there is wofully lacking the following units of a properly coördinated system: 1. Open-air schools run in conjunction with the dispensaries as a preventorium or for children returning from a sanatorium. 2. Farm colonies and working centres in order to continue the salutary effects derived at the sanatorium and to train a man so that he may find it possible to earn a living under suitable conditions. 3. Hospitals for tuberculosis, both for the observation case and the advanced case in order to ensure accommodations in the sanatoriums for definitely curable cases only, and to prevent advanced cases from disseminating the disease in their homes.—*A Criticism of the London Scheme for the Prevention of Tuberculosis, G. H. Dart, Brit. J. Tuberc., April, 1920, xiv, 64.*

Tuberculosis Activities of the American Red Cross in France.—The Bureau of Tuberculosis and Public Health of the American Red Cross was created in August, 1917, and undertook to facilitate the completion of tuberculosis projects which would, owing to the exigencies of war, either have been abandoned or postponed. The following activities were engaged in: 1. The departmental survey of all tuberculosis activities. 2. The amelioration of conditions in existing tuberculosis institutions by improvising and completely equipping sanatoriums, thereby supplementing the shortage of beds at that period. 3. The subvention of dispensary construction and their operation—106 in all. 4. The subvention of hospital and sanatorium construction and operation, 2712 new beds being maintained. 5. The conversion of suitable premises into sanatoriums, thus furnishing 888 additional beds. 6. The subvention of popular educational propaganda. 7. The subvention and assistance in special fields

of work as Serbian relief and the French Red Cross. 8. Coöperation with the A. E. F. in the preparation of tuberculosis propaganda. 9. The organization and operation of a Hospital Admission Bureau and Social Service in the Paris Hospitals.—*The Rôle of the American Red Cross in the Tuberculosis Campaign in France During the Great War, E. G. Davies, Brit. J. Tuberc., July, 1920, xiv, 120.*

Annual Report, New York Association of Tuberculosis Clinics.—This association was formed in 1907 with only 8 clinics in Manhattan and the Bronx, whereas now there are 30 clinics extending over the entire city. They have had under their care in 1919, 43,000 patients requiring a total of 128,000 dispensary visits. In addition, trained nurses have made 57,000 calls to their homes, giving the personal attention necessary. About 17,000 children exposed to tuberculosis were kept under observation. Such constant and purposeful efforts as those of the association, year in and year out, must be in this city one of the most potent forces for the control and reduction of tuberculosis as well as assuring a stronger and healthier future generation.—*Year Book of the New York Association of Tuberculosis Clinics and the Annual Report for 1919.*

Annual Report of the Trudeau Sanatorium Medical Board.—Since the armistice soldiers and sailors have been admitted to the institution. On admission of the patients, they are sent to the Medical and Reception Pavilion, or to the Rest Squad. Those in the Rest Squad go to bed for six weeks and those in the Medical Pavilion go to bed if they have previously been in bed; if not, they are permitted to go to meals but take no other exercise. A complete history of each patient is taken and a month later is checked up by another physician. Chest examinations are made every month. The lungs are examined by the fluoroscope and X-ray plates, and tuberculin is given. Sputum and blood tests are performed. From 2.5 to 3 per cent positive Wassermann reactions are found. The adrenalin test has been a routine measure for several years. The commonest complication of fatal pulmonary tuberculosis is intestinal tuberculosis. The protein sensitization test is used in patients whose state suggests this condition. The urine is studied from month to month and blood counts made when necessary. Careful dental examinations are included. The patient can consult a nurse or physician at any time. Organized entertainment is furnished the patients. Once a week the entire staff makes rounds and endeavors to discover why certain cases are not making more favorable progess. The laboratory work is heavy. For example, 760 tests for complement fixation for tuberculosis, and the same number for syphilis were made. Throat cultures, blood analyses, sputum cultures for secondary organisms, cultures from boils and many other bacteriological examinations were made. Whenever the urine contains albumin, search is made for tubercle bacilli, and guinea pigs are inoculated. A rapid method of diagnosis of renal tuberculosis is now being studied. Chemical analyses are made of the stools of patients having symptoms suggesting intestinal toxemia, and dietary treatment instituted. After a study of many thousand cultures it has been possible to demonstrate several types of human tubercle bacilli. The influence of vitamins on the development of tuberculosis, and on experimental tuberculosis is in progress. Work on the serums of immunized sheep has disclosed antibodies to be present in the globulins. The X-ray work has steadily increased in volume and in importance. A new building is almost imperative because of the crowded condition of this department. The work of the nursing staff during the past year is highly commended. The class of twelve nurses has been kept full and their standard is good. The medical library is growing more valuable each year and has been reorganized.—*Annual Report of the Trudeau Sanatorium Medical Board, L. Brown, Annual Medical Report of the Trudeau Sanatorium, 1919, October 31, 1.*

Medical Report of the Trudeau Sanatorium.—The elimination of all nontuberculous cases from the sanatorium is still a difficult problem. The exclusion of hyperthyroidism by subcutaneous injections of adrenalin remains uncertain, whereas the subcutaneous tuberculin test is being employed with increasing advantage—failure to react to a second dose of 10 mgm. of tuberculin ruling out tuberculosis. During the past year an attempt has been made to classify all patients by physical signs and X-ray findings as the use of the former alone is often misleading. The following classification has therefore been adopted: 1. The incipient group X-ray showing a unilateral area involved only extending down to the second chondrosternal junction or a pleuritic shadow. 2. The moderately advanced group: here an entire lobe may be involved with cavitation not greater in extent than one intercostal space. 3. The far advanced group: here a shadow greater in extent than the area of one lobe is shown

with areas of rarefaction greater in extent than the area of one intercostal space. Statistics of cases treated are appended as well as a number of reprints of articles by members of the staff.—*35th Medical Report of the Trudeau Sanatorium and the 15th Medical Supplement, 1919, F. H. Heise, 6.*

Epidemiology of Phthisis.—Gordon emphasizes the importance of the work of Brownlee and confirms the investigations made some years ago in Devonshire which proved that the prevalence of phthisis is promoted by strong rain-bearing winds. The following may now reasonably be regarded as established: 1. In Devon, people exposed to strong, rain-bearing winds, suffer considerably more from phthisis than people sheltered from them. 2. Throughout the world, wherever trustworthy statistics exist, the same influence of these winds is traceable. 3. These winds also adversely affect the course of the developed disease in patients exposed to them. This accounts for the frequent disappointing results of sanatorium treatment due to ill-chosen sites. Tuberculosis in cattle is influenced in the same way, yet this point has received no attention. 5. Altitude per se, exercises no appreciable effect, after the influence of rain-bearing winds has been eliminated. 6. Geological formation does influence the prevalence of phthisis. 7. The effect of occupation and density of population is modified by coexisting climatological conditions. 8. "The principle of the approximate isolation of influences" must be recognized and applied in order to place the subject of climatology on a solid scientific basis.—*The Epidemiology of Phthisis, W. Gordon, Brit. J. Tuberc., July 1920, xiv, 112.*

The Début of Tuberculosis.—Three infants were known to have been contaminated by the mother at a certain date. The period before they became capable of responding to the intracutaneous tuberculin test was shorter, the older they were and the greater the exposure. During this *période anté-allergique* there are absolutely no clinical manifestations to attract attention to the infection. The minimum period seems to be six days, and the maximum, judging from this experience, is four months.—*La période antéallergique de la tuberculose; pénétration silencieuse du bacille tuberculeux dans l'organisme du nourrisson, R. Debre and P. Jacquet, Annal. d. Méd., 1920, vii, 122.*

Muscle Signs of Pulmonary Tuberculosis.—Halbron and his co-workers examined 157 patients and 52 healthy controls for the abrupt local contraction of the trapezius and other muscles when the margin was suddenly pinched. This has been cited as a sign of a chronic tuberculous process in the lung on that side. The contraction across the muscle feels like a cord, and Lévy even contends that the absence of this *corde musculaire* or myo-edema excludes tuberculosis, or at least an active process. The myotonic reaction in the trapezius occurs normally on both sides; it is significant only when it is exaggerated on one side. The reflexes on percussion of the deltoid, pectoralis and supraspinatus are more pronounced on the diseased side. These muscle signs were pronounced in from 81 to 96 per cent of the tuberculous examined; usually the active cases. The findings were positive only in 10 per cent of the presumably healthy controls. These muscle signs are especially useful in dubious cases, and in suggesting a tuberculous origin for emphysema and chronic bronchitis. The reaction does not always correspond to the side with the most extensive lesions, but to the most active. Sainton greases with petrolatum the thumb and forefinger for pinching the muscle, and states that the myo-edema never lasts for more than eight to twelve seconds. It occurs most pronounced and persistent in typhoid, in chronic pulmonary tuberculosis, and in lead poisoning, and is a sign of impregnation of the organism with toxins. Lion reported positive findings even with intoxication from stenosis of the pylorus.—*La valeur des phénomènes musculaires au cours de la tuberculose pulmonaire chronique, P. Halbron, L. Pradal, and B. Theodoresco, Bull. d. l. Soc. Méd. d. Hôp., November 21, 1919, xliii, 973.*

Localization of Pulmonary Lobes by the X-Ray.—By means of the X-ray chest plate thoracic lesions can be accurately located before operation. The lower right and left lobes are often difficult to accurately localize in the normal chest. On good stereoscopic plates taken with fuller exposure and softer tube than for chest examinations one notices that a greater number of branches are given off the main stem bronchus posteriorly, and if the trunks have been carefully charted in the upper lobes, the rest of the chest cavity is occupied by the lower lobes. The trunks, e.g., the heavy lines extending from the hilum into the lung fields, are the increased densities which are produced upon the X-ray plate by the bronchi and accompanying vessels. If the lung fields are divided into three zones, (1) hilum or root zone, (2) trunk or middle zone and (3) periphery or pleural zone, we will find that the heavy masses at the root are the hilum, and

the trunks extending out in all directions, and beyond them are many fine branches, the so called linear markings. The branches of the vertebral trunk are so close together on the plate that unless there is a lesion it is impossible to separate them. Physical signs of this area are heard in the supraclavicular or supraspinous fossa. Apex lesions are limited to the area within the circle of the first rib. If one thinks of the fifth rib as marking the upper border of the lower lobe, it will help him to visualize the lobes. To be accurate this rough line needs modification: (1) The incisura above the lower lobe at the chest wall is a little higher on the left. (2) The apices of the lower lobes extend slightly above the fifth rib near the spine. (3) The incisura reaches the diaphragm so that in front it extends below the fifth rib. But lobes are not constant. The lung is a very movable organ and contractile tissue frequently dislocates the normal position of the lobes. There are a few differences between the upper left and the upper right lobe. The hyparterial bronchus passes under the left pulmonary artery as well as under the arch of the aorta. The lingula tip has its own trunk and by some is compared to the middle right lobe. Diaphragmatic hernia can easily be diagnosed, the movement of the diaphragm be watched and the posterior mediastinum inspected.—*Localization of Pulmonary Lobes by the X-Ray, K. Dunham, Med. Rec., June 26, 1920, xcvii, 1077.*

Fluoroscopy vs. Physical Diagnostic Methods.—At Camp Lewis, Wash., of 16,589 soldiers who were sent up for fluoroscopic examination, 4563 were reëxamined and 570 were rejected on account of active tuberculosis, though according to roentgenologic examination 1843 were tuberculous and suspicious. In analyzing the official tabulated results of rejected cases it was found that of the 570 rejects on the clinical diagnosis made by the tuberculosis specialists, the roentgenologic examination detected 315 or 55 per cent positive tuberculosis. Of 343 cases reported by the fluoroscopist as unqualifiedly tuberculous, only 315 were rejected. Of the 1500 reported by the fluoroscopist as suspicious, 1372 were accepted by the tuberculosis specialists for full military service, while 128 were rejected with unmistakable physical findings of chronic active fibrocaseous tuberculosis. Of the 2349 reported by the fluoroscopist with an abnormality, 2249 were accepted on physical examination for full military service and 100 were rejected by the tuberculosis specialists for chronic active fibrocaseous tuberculosis. Of 12,393 reported negative by the fluoroscopist, 27 were found with physical findings sufficient to justify a diagnosis of chronic active fibrocaseous tuberculosis and were rejected. In a group of 216 cases of active pulmonary tuberculosis rejected, in which the specialists confirmed the diagnosis of the preliminary examiners, only 116 of them, or 54 per cent, were recognized as positive tuberculosis by means of the roentgenologic examination. These were all cases in which the preliminary examiners were able to make the diagnosis on physical findings alone. Of 83 cases sent to the X-ray laboratory with a diagnosis of inactive or healed tuberculosis by the preliminary examiners and confirmed by the specialists, only 47, or 56 per cent, were positively diagnosed under the roentgen ray. The above data clearly indicate the shortcomings of fluoroscopic examination in chest work which can never supersede physical examination. The author disputes the claim made by Matson that "the physical signs in the case of chronic fibrocaseous tuberculosis are minimal and susceptible of recognition only by the experienced clinician, but the screen findings offer unmistakable evidence of the abnormality in question."—*Fluoroscopy versus Physical Diagnostic Methods of Chest Examination in Army Work, D. C. Twichell, Southwest. Med., August, 1920, iv, 3.*

Body Weight.—The literature furnishes an embarrassing variety of standards by which to judge whether the weight of a given person is within normal limits. To enable the physician or statistician to choose between these methods, the authors collected measurements and actual weights on a series of 249 normal soldiers, then predicted the weights for these men by means of various standards, and finally by comparing these predicted weights with the actual weights, computed the error made by each standard. They arrived at the conclusion that the normal weight for an American man may be predicted somewhat more accurately by Bornhardt's formula than by the Army and Navy table, the Medico-Actuarial, Guthrie's, Broca's, or von Noorden's standard. This was true for a series of 249 native-born men, aged eighteen to thirty-four years inclusive. Whether it would also hold true for other men, for women and for children, cannot be stated. Bornhardt's standard was uniform in accuracy at varying ages, weights, heights and chest girths. Though other writers have urged the value of routinely recording the chest perimeter as well as height, nobody has incorporated it into a formula as simple as Bornhardt's. And just as his rule (based on height and chest girth) as a rough measure of surface

seems both theoretically and empirically the best guide so far offered for guessing weight, so we expect that experiment would discover an even better rule (based on height, chest and a third factor) expressing a rough measure of volume. For fundamentally weight must be proportional, not to length nor surface, but to cubic mass. In Bornhardt's formula, if H be the height without heels in centimeters, C the mean chest girth in centimeters as measured over the nipples, W the net weight in kilograms, then the expected weight for the adult of average constitution is $W = H \times C/240$.—*Body Weight in Two Hundred and Twenty-Nine Adults. Which Standard is the Best? H. Gray and J. F. Mayall, Arch. Int. Med., August, 1920, xxvi, 133.*

Chest Measurements.—It is futile to record chest measurements at the nipple line, for the following reasons: (1) Lung capacity and competency cannot be estimated by a tape line nor actual lung disease excluded. (2) The degree of chest expansion or mobility, expressed in inches on reports of physical examinations, are of no value except to suggest developmental possibilities in the immature. (3) The form of the chest in young men is immaterial, since all forms can be increased in size by rib elevation through muscular development. None of the classical chest forms are incompatible with great lung power and physical vigor. (4) If chest mobility is to be recorded by inches, the measurements should be made at the level of the ensiform cartilage. —*Insignificance of Recording Chest-Measurements Made at Nipple Line, R. M. Culler, Mil. Surgeon, June, 1920, xlvi, 646.*

Early Diagnosis.—In New Zealand hemoptysis, unless due to hydatid cyst, is always tuberculous in origin. So is pleurisy with effusion, although not every case subsequently develops phthisis. The general ill health and toxic symptoms are the same in New Zealand as noted everywhere; when such symptoms persist or recur from time to time without any obvious cause, a study of the temperature should be made. Temperature charts of early phthisis, as observed by the author, are quite distinctive—97° in the morning and 99.4° or so in the afternoon —and, with other causes excluded, are as positive an indication of phthisis as can be had without physical signs. Cough is always an accompaniment of active tuberculosis. The first physical signs are to be sought on the contiguous borders of the upper and lower lobes, close to the edges, and more frequently on the right side. X-ray examination should be a routine measure in all cases, especially for the differential diagnosis of lung cysts, which may exactly simulate phthisis. Also, a clear conception of the deficient expansion of the apex is best obtained by this means. The author has given up the use of tuberculin in diagnosis, as too dangerous.—*Early Diagnosis of Pulmonary Tuberculosis in New Zealand, A. Foster, Brit. M. J. May 29, 1920, 753.*

Differential Diagnosis.—Diagnostic difficulties are often encountered not only in the early cases, but also in those of long standing with many chest signs. The history of five of the many cases treated at Gouverneur Tuberculosis Clinic during the past ten years are given. The following has been deduced from these cases: (1) Do not make a diagnosis on one examination. (2) Bear in mind the possibility of tuberculosis coexisting in an apparently uncomplicated case of chronic bronchitis with emphysema. (3) Do not neglect to make a Wassermann and search for other signs of syphilis. (4) Even if the X-ray does not show the presence of a foreign body, the latter may be the cause of a chronic lung suppuration. Experience shows that a careful weighing of all the elements presented, plus time, is necessary in order to arrive at a correct diagnosis. —*Chronic Pulmonary Conditions Simulating Advanced Tuberculosis, W. Narins, Med. Rec., June 12, 1920, xcvii, 997.*

Physical Findings in Pneumothorax Lungs.—From the very large material of the Sanatorium Schatzalp-Davos, the author selected typical cases which could be followed up until practically recovered and sums up his observations on the condition of the compressed lungs as follows: In course of time the pneumothorax lung tends to reëxpand. The physical signs show a certain uniformity: retraction and lagging of the pneumothorax side with diminished motion of the diaphragm and lower lung border, diminished pulmonary resonance or dulness, diminished vocal fremitus, increased or bronchovesicular breathing, and loud, dry râles. There is either no sputum or only small quantities without tubercle bacilli. The sound side is enlarged. Exudate cases show thickened pleura, as evidenced by diminished motility, breath sounds, voice and fremitus. After thoracoplastic operations the findings are proportionate to the extent of the collapse obtained. The lung can never assume normal conditions. Auscultation and percussion findings are similar to those in extensive shrinkage of the lung, namely, marked dulness and tympany, absent or diminished breathing, generally of a bronchial character, persistent and abun-

dant coarse râles, disfigurement of the chest skeleton and atrophy of the soft parts. Sputum is either absent or without tubercle bacilli. The other lung is much enlarged.—*Ergebnisse der physikalischen Untersuchung bei der Kollapslunge nach Pneumothorax und Thorakoplastik, C. Real, Beitr. z. Klin. d. Tuberk., 1915, xxxv.*

The Diagnosis of Malignant New Growths of the Lungs and Pleura.—Sokolowski describes twenty cases. Some of these show symptoms similar to those which are present in chronic pulmonary tuberculosis. X-ray examination and bronchoscopy greatly aid the diagnosis. A microscopic examination of the sputum should also be made, although it is rare to find characteristic cells of new growth in the heavily bloody sputum. The X-ray shows sharply circumscribed shadows in cases of more or less circumscribed infiltrated pulmonary and pleural new growths located towards the surface and in the lower and middle lobes. It is of great value in the differentiation between apical tubercu'osis and new growths. The shadow of a neoplasm generally does not cover the point of the apex, and the latter is visible around the shadow in the form of a light stripe. The absence of disseminated foci is characteristic in neoplastic apices. In new growth of the lower lung and pleura accompanied by pleural exudate, as so often occurs even in the early stages, the extensive shadow only reveals exudate, and the total clinical picture must determine the diagnosis, especially the cachectic appearance of the patient. Fluoroscopy only exceptionally reveals the tumor, and then the exudate must be small and of a purely serous character. This is still more true of new growths developing centrally from a bronchus. Bronchoscopy is of great value in these latter cases. Through the bronchoscope it is often possible to discover an incipient new growth, and by removing a piece for microscopic examination to determine its nature and histologic details. In cases with symptoms of stenosis, bronchoscopy may reveal even at an early stage that the dyspnoea is caused by pressure on a bronchus, and it may even reveal the depth of the disease. Sokolowski draws the following conclusions from his twenty cases: (1) Sixteen of the cases started from a bronchus and gradually invaded the lung-tissue in the form of smaller or larger infiltrations. In ten of these the neoplasm was in the left lung, in seven in the upper and in three in the lower lobe. One case had stenotic signs for two years, after which the tumor spread over the whole left lung. Three had signs of exudate. Only two of the twenty cases were women. The duration of the illness was from a few months to four years, the average being about one year. (2) Chest pain must be particularly noted among the subjective symptoms. It was generally unilateral. With six patients this was a permanent symptom, with one patient a permanent and dominating one, and was localized in the affected side from the beginning of the disease to death. Other symptoms are cough, difficulty of breathing, and dyspnoea on the slightest exertion. With all patients gradually increasing cough and dyspnoea were present until death. Purulent and bloody sputum appeared most often in the later stages, and copious blood spitting quite often in the last stages. The bloody, raspberry-jelly-like sputum reminds one of that occurring in lung infarct. Exceptionally there occurs steady but slight blood-spitting for a long period of time, suggesting strongly tuberculosis. (3) One of the most constant subjective symptoms is gradual emaciation and loss of strength. This is often the primary symptom. There are exceptional patients, with quite a well developed process, who look well, and who claim that they feel well. With these patients the focus is bronchial. (4) The statement usually made that pleural or pulmonary neoplasms cause no fever is incorrect. There is either permanent or intermittent fever of varying character or intensity. Constant fever most often occurs when the growth begins to break down, that is in the later stages. (5) Physical signs: The affected side may be distended or retracted. On the skin of one or both sides of the chest dilated subcutaneous veins are sometimes prominent. In the subclavicular region groups of indurated lymph nodes are occasionally observed. In foci developing centrally no percussion changes are observable for a long time. Superficial neoplastic infiltrations reveal a very typical and irregular dulness confined to one part of the lobe. In the last stages, especially in the presence of pleural exudate, there is dulness over the entire posterior and anterior half of the chest. On auscultation there are no typical physical signs. Malignant neoplasm should be suspected when in the presence of chest symptoms considerable loss of weight and strength occurs and other conditions can be excluded.—*Zur Diagnose der bösartigen Neubildungen der Lunge und Pleura, A. Sokolowski, Beitr. Z. Klinik d. Tuberk, May 10, 1916, xxxv, 205.*

Tuberculin Tests in an Isolated Parish.—The parish—F. valley—Norway, with a total population of 60, is well isolated and has its own school. It is seldom that one

of its members comes in contact with the outside world. Not a school child was infected. Twenty-one or 40 per cent of the 53 examined showed a positive reaction and 32 or 60 per cent showed a negative reaction. No one below the age of sixteen was infected. Ten out of 17 children had enlarged glands in the neck. Seven out of these 10 had bad teeth. The enlarged glands are attributed to the bad teeth. On the whole the entire population had bad teeth and the care of the teeth was practically unknown. In this parish no death has been known to have occurred from tuberculosis.—*Von Pirquet Investigations in a Parish Without a Notified Death from Tuberculosis, E. Bjorn-Hansen, Tubercle, May, 1920, i, 359.*

Skin Sensitivity to Tuberculin Test.—The multiple papillary cutaneous test of Ellis is regarded by Luker as a reliable, time saving, tentative method of preliminary sifting of cases into such classes as: (a) Clinically active, (b) doubtful, (c) quiescent, (d) nontuberculous. Though the test results of these carefully determined minimal effective doses furnish no reliable data as to the amount of lung involvement, yet they give some criteria as to the toxemia present. The test is a valuable guide in estimating the threshold of probable reactions to Koch's hypodermic test or the optimum commencing dose in tuberculin treatment. In the routine examination of individuals presenting no obvious defects, an intracutaneous injection of 0.0001 cc. O. T. compared with a similar control of physiologic sodium chloride solution would serve as a quick, reliable way of differentiating candidates into clinically affected and doubtful classes.—*Skin Sensitivity to Koch's Old Tuberculin under Dispensary Conditions, D. Luker, M. J. Austral., June 12, 1920, i, 548.*

The Subcutaneous Tuberculin Test in Adults.—Fifty-five doubtful cases were tested under the necessary precautions with doses of 0.1, 0.5, 1.0 and 5 mgm. O. T., injected subcutaneously twice a week. Seven reacted negatively, 12 showed a focal and 36 a general reaction. Focal reactions occurred once after 0.1 and once after 0.5 mgm., and 4 times after 1 and 6 times after 5 mgm. General reactions occurred twice after 0.1, 7 times after 0.5, 14 times after 1, and 13 times after 5 mgm. The author comes to the conclusion that the subcutaneous test should be abandoned because it has so very little diagnostic value and because it may do harm.—*Was leistet die subkutane Alttuberkulinprobe zur Erkennung der aktiven Lungentuberkulose bei Erwachsenen? Bochalli, Beitr. z. Klin. d. Tuberk., 1915, xxxv.*

Seasonal Fluctuation of Susceptibility to Tuberculin.—For several years the author had noted that at times tuberculous children showed very acute reactions to small doses of tuberculin but he was inclined to attribute them to an error in dosage. On careful study of the matter, however, it appeared that small intracutaneous doses might produce not only local but even general reactions at times. Taking note of the time of year he found that in the fall children with outspoken tuberculosis gave positive reactions only with relatively large doses of tuberculin and further that cases with signs of a healed lesion gave only delayed reactions to a dose of 1 mgm. He therefore concluded that the tuberculin susceptibility is ordinarily greater in the spring than in the fall and correlates this observation with the fact that the frequency of tuberculosis is greater in the spring than in the fall. Tuberculin susceptibility is a function of immunity and the degree of the reaction is an indication of the activity of the protective mechanism of the body, extreme reactions signifying a most energetic defense against the progress of the disease. Underlying the seasonal variation in the incidence of tuberculosis is the fact that in winter children are confined within doors and as a result they most often appear with disease in the spring after their resistance has been reduced.—*Jahreszeitliche Schwankungen der Tuberkulinempfindlichkeit, F. Hamburger, Münch. med. Wchnschr., April, 1920, lxvii, 398.*

Prognostic Value of the Cutaneous Reaction to Old Tuberculin and to Partial Antigens.—After a review of the literature the author deduces the following fundamental principles upon which he bases his theory of the skin reaction in a tuberculous individual: (1) The cutaneous tuberculin reaction is strong because many antibodies are present and therefore, by combination with the antigen anaphylotoxin is split off. (2) The cutaneous tuberculin reaction is weak or absent; (a) because too few antibodies are present allowing the absorption of much of the antigen; (b) because so much antibody is present that the antigen is quickly reduced to a nontoxic end product; (c) because of the absence of tuberculosis and a consequent absence of antibodies; (d) because of nonspecific influences. In an attempt to obtain information of value in prognosis Kämmerer used old tuberculin intracutaneously in dilutions of 1:100, 1:1,000 and 1:10,000. Careful note was made of the extent of the infiltration, the extent and intensity of the erythema, the occurrence of vesicles, pustules, necrosis, nodulation,

lymphangitis and lymphadenitis. The clinical material consisted of a large number of cases which were either definitely nontuberculous, suspects, or undoubtedly tuberculous in various degrees of severity. Readings of the skin reactions were made daily but most frequently on the fourth, fifth and sixth days. Only the strong reactions are of value in determining a prognosis; for those of a moderate grade occur in fully fifty per cent of all the cases. The failure led to a repetition of the test using Much's partial antigens, both the M. Tb. R. (the lactic acid residue of tubercle bacilli), and the single antigens, A, the albumin, F, the fatty acid lipoids, and N, the neutral fats. The M. Tb. R. was used in three dilutions, 1:10,000,000, 1:100,000,000 and 1:1,000,000,000. The reactions on cases of all types were weak and confusing. Seventy-eight patients were then given simultaneous intracutaneous injections of A., F., and N. in the following strengths, A., 1:10,000,000; F., 1:10,000; and N., 1:1,000. Most of the cases were clinical pulmonary tuberculosis in various stages while a few were nontuberculous. No clean cut evidence of value in prognosis was obtained. The author states that on the whole he thinks the partial antigens are less serviceable than old tuberculin for purposes of prognosis. He then considers briefly the work done by various investigators on the effect of nonspecific influences on the cutaneous reaction, e.g., by the administration of potassium iodide, thyroid extract, benzol, typhoid inoculations, intercurrent acute infections, old age, and malnutrition. He shows that when the body is vigorously engaged in the desaturation of antigen the cutaneous reaction becomes weakened not only to the specific antigen used but to others as well. Because of the frequency of nonspecific influences which affected the reaction he was led to seek a solution of the problem in the so called sensitizing reaction with O. T. This consists in the injection of a given dose of old tuberculin and repeating the dose in eight days, perhaps in the opposite arm. The second reaction is very much more severe than the first and as the result of the sensitizing action of the first dose, a condition analogous to anaphylaxis arises following the second injection. This is due to a mobilization of antibodies from the focus through the circulation to the skin rather than a sudden new formation of antibodies. One hundred and three cases were given primary injections of old tuberculin in three dilutions (1:100, 1:1,000, and 1:10,000), each 0.2 cc. in the right arm. Controls were made daily for five to six days. On the eighth day the same doses were repeated in the left arm. Sixty-six of the cases showed an increased reaction to the second dose, while 37 were of the same strength or decreased. The striking feature, however, was that 52 of the 66 cases with increased reaction showed a very rapid development with an equally rapid subsidence of the local signs. This is again proof of the anaphylactic nature of the reaction, and may be explained as a rapid and complete destruction of the protein molecule. These results justify the conclusion that in cases having a favorable prognosis the second reaction will be increased while the unfavorable case will show a second reaction either the same as the first or less in degree. The healthy individual or one with only slight disease reacts definitely and strongly to the second injection because the sensitizing dose either mobilizes antibodies or new ones are formed. The sensitizing reaction was likewise repeated using Much's partial antigens in the same manner, but it was difficult to differentiate between mild and severe types of cases. Likewise old tuberculin and partial antigens were used in combination but without any particularly striking results.—*Was bedeuten die kutanen Reaktionen mit Alttuberkulin und Partialantigenen für die Prognose der Tuberkulose?, D. Kämmerer, Münch. med. Wchnschr., March 26, 1920, lxvii, 375.*

Pirquet Reaction in Pulmonary Tuberculosis.—The object of these investigations was to estimate the value of the cutaneous tuberculin test as a diagnostic and prognostic agent in cases of pulmonary tuberculosis. Of 100 cases tested the following conclusions were arrived at: In adults, the von Pirquet test is of little value as a diagnostic and prognostic agent, except in a very limited number of cases. 2. A negative reaction is no proof that a patient is nontuberculous. 3. A negative reaction may be obtained in advanced cases, and a markedly positive reaction does not necessarily indicate a good prognosis. 4. The reaction is always positive when tubercle bacilli are present in the sputum, except in advanced cases. 5. In children the reaction may be negative in 30 per cent of cases of pulmonary tuberculosis. 6. After sanatorium treatment the percentage may be reduced to 17, the reduction indicating an improvement in the immediate prognosis.—*The von Pirquet Reaction in Pulmonary Tuberculosis with Notes of a Few Cases, W. A. Muir, Brit. J. Tuberc., July 1920, xiv, 115.*

Tuberculin in Animals.—The following conditions are often the cause of disappointment in applying the tuberculin test: 1.

The tuberculin has not been properly prepared. 2. The records of post-injection temperatures do not extend over the required length of time to detect late reactions. 3. Infected animals are tested during the period of incubation before lesions have developed 4. The lesions are arrested, encapsulated, healed or very extensive. 5. Animals should be considered as unfit to receive the test when in advanced pregnancy or when passing through the period of estrum. 6. Animals suffering from any acute infectious disease should be considered unfavorable subjects. 7. The quantity injected is insufficient. 8. Animals to be tested should be in a comfortable place, under normal surroundings, and allowed to remain quiet, especially when the reaction falls due, as some individuals under sufficient excitement will show a decided rise in temperature. 9. One should not fail to note clinical evidence of advanced tuberculosis, for extensive broken down lesions, setting free enormous quantities of toxins, may fail to cause a reaction with the usual amount of tuberculin injected. The author has given as much as ten times the usual dose in such cases with positive results. The tuberculin test is not a mere mechanical procedure but one which requires a reasonable amount of good judgment in its interpretation.— *Tuberculin, Its Reaction and Use, C. W. Gates, Amer. J. Vet. Med., August, 1920, xv, 366.*

Muscular Changes in Pulmonary Tuberculosis.—In the early stages of pulmonary tuberculosis as shown by the research work of C non, Minor, Crile, Fischer, and Pottenger, there is observed a tightening and increased tonus in such muscles as the trapezius, pectoralis major, sternomastoid and scaleni and a diminished movement of the diaphragm. In the later stages a degeneration and thinning of these same structures and the subcutaneous tissues overlying them had been noted. These changes are due to reflex action. The endings of the sympathetics in the pulmonary tissue are irritated by tuberculo-toxins and this irritation is transmitted chiefly through the third and fourth cervical segments to the muscles supplied by them. Besides motor, we have sensory disturbances, as pain in the shoulder and under the clavicle common in early tuberculosis and often mistaken for rheumatism or neuritis. These changes take place during any intrapulmonary inflammatory condition irrespective of the cause. The response is comparable to the marked spasm of the abdominal muscles seen in appendicitis. Increased spasm of the muscle manifests itself by a feeling of tenseness to the touch, increased convexity and a bunching up of the muscle fibres. When the condition becomes chronic the muscles degenerate and become atrophic. On palpation they assume a boggy, inelastic, stringy feel. Likewise, the subcutaneous tissue becomes thinner and loses its elasticity. Trophic changes are often manifested by pigmentation in the skin. Where muscles atrophy from disuse or emaciation, the subcutaneous tissue is not affected—a useful point in differential diagnosis. In children, Pottenger draws attention to the degeneration of the skin and subcutaneous tissues in the interscapular region from the second to the fifth dorsal spines, which he uses as a valuable diagnostic sign indicating marked bronchial gland involvement. This, combined with dulness on percussion, constitutes strong corroborative evidence. Increased tonus of the muscles around the shoulder girdle with pain, after eliminating occupational influences, is evidence of the presence of some acute intrapulmonary inflammatory condition, tuberculous or otherwise. If there is a definite degeneration of the muscles, subcutaneous tissue and skin, we may conclude that some chronic inflammatory condition of the lung or lungs is present, most likely tuberculosis. If there is an increased tonus of the degenerated muscles, this almost certainly indicates a renewed activity of the disease in an old quiescent focus. Galecki found increased spasm of the neck and chest muscles in 93 per cent of cases examined in early active tuberculosis. Percussion over degenerated muscle and subcutaneous tissue will lower the pitch of the note considerably and may often mislead one when comparing it with the healthy side which may be of the same pitch. The recognition and proper interpretation of these reflex signs will prove extremely helpful in diagnosis and will prevent mistakes. These changes are not apparent until looked for carefully and should not be attributed to mere general emaciation.—*On Muscular Changes Occurring in Pulmonary Tuberculosis, J. Craig-MacGown, Brit. J. Tuberc., July, 1920, xiv, 112.*

Intrapleural Tension.—Most of the physical and functional signs of an effusion in the pleura and several of the mishaps for which thoracocentesis is held responsible are in reality due to modifications of the intrapleural tension. By doing thoracocentesis without attempting to aspirate the effusion, the pressure rights itself and there is no danger of mishaps, and the patient does not become fatigued. He reclines on his back, the edge of the thorax close to the edge of the bed. The puncture is made in

the sixth or seventh interspace, as closeas possible to the posterior axillary line, and all of the fluid is allowed to escape spontaneously. The tension at the close was always found normal.—*Les tensions intra-pleurales dans les épanchements liquides de la plèvre. La thoracocenthèse sans aspiration et en position couchée, H. Flurin and J. Rousseau, Ann. d. Méd., 1920, vii, 325.*

Chromogenic Reactions in the Urine of Tuberculosis Patients.—The study was based on three different reactions, namely, the diazo reaction, the Moritz-Weiss urochromogen reaction, and the iodin reaction of Petzetakis. They have no diagnostic value, but their prognostic value is proved. The order of their importance is, first the urochromogen, second the diazo, and last the iodin test. The reactions result from the absorption of putrid substances by the circulation. Their presence indicates caseation and destruction of tissue. They appear together with positive intracutaneous tuberculin reactions.—*Reacciones Cromogenas en la Orina de los Tuberculosos, T. Seix, Arch. Espanol. de Tisiolog., May, 1920, i, 301.*

The Temperature in Pulmonary Tuberculosis.—There can be no activity of tuberculosis without a rise in temperature. Therefore, it is advisable to record the temperature every two or four hours. The temperature may stay normal for days or weeks or months and then jump. The longer the period of quiescence, the less likely is it to be interrupted and the more certain is healing by fibrosis. The taking of the temperature may seem a very easy thing, but it is exposed to many errors. The best way to take it is by rectum. Exercise causes a rise in the bodily temperature. The greater the difference between the evening and morning temperature the worse the prognosis is likely to be. Patients with a slight morning and evening rise should be put to bed and watched carefully.—*The Temperature in Pulmonary Tuberculosis, J. Watt, J. State Med., June, 1920, xxviii, 161.*

Complement Fixation Reaction in Tuberculosis.—Of the 6,500 reactions studied 2,078 were clearly negative and 1,027 were inconclusive (over 50 per cent hemolysis). There were 1,344 moderately positive (from 25 to 50 per cent hemolysis) reactions, and 2,051 strongly positive (no hemolysis) reactions. Of 1,103 sera from patients definitely proved to be tuberculous, 865, or 78 per cent, gave positive reactions. The 238 negative sera in this group represent twenty-six moderately active, seventy-three arrested, and eighty acute or general tuberculosis, with no detailed information regarding fifty-nine sera. Of 521 sera from patients with clinical tuberculosis not confirmed by sputum or roentgen-ray examination, 336, or 64.6 per cent, gave positive reactions. Of 822 sera from patients in whom tuberculosis was suspected but not established, 303, or 37 per cent, gave positive reactions. Of 554 sera from patients who were not examined for tuberculosis, 183, or 33 per cent gave positive reactions. Of 168 sera from patients in whom examination revealed no evidence of tuberculosis, seven, or 4.2 per cent gave positive reactions.—*The Complement Fixation Reaction in Tuberculosis: Reporting Six Thousand Five Hundred Reactions, W. W. Watkins and C. N. Boynton, J. Am. M. Ass., October 2, 1920, lxxv, 933.*

The Leucocytic Formula in Tuberculosis.—From a review of literature and personal work the conclusion is reached that there is in the mild forms of tuberculosis a leucocyte formula indicating resistance, characterized by normal total count, eosinophilia, lymphocytosis and changes in the Arneth count to the right. The prognosis in such cases is good. In tuberculosis of higher virulence there is a leucocytic formula indicating defense, with an increased total count, polynucleosis, normal or slight lymphocytosis and hypoëosinophilia, and changes in the Arneth count to the left. The prognosis is poor.—*La Formula Leucocitaria de la Tuberculosis, F. Jimenez Asua. Arch. Espanol. de Tisiolog., May, 1920, i, 167.*

Traumatic Pulmonary Tuberculosis.—There is as yet no uniformity of opinion on the subject of the relationship of tuberculosis of the lungs and trauma. The study of gunshot wounds of the chest offers a good field for this investigation. Four questions arise for discussion: 1. How many of those wounded in the chest were actually suffering from tuberculosis of the lungs at the time of injury? In many of these the acute condition made it impossible to employ physical examination to advantage. The X-ray revealed nodules of tuberculous deposit much more frequently. Six men out of 139 had positive signs of old tuberculosis of the lungs. 2. What is the after history of these cases? Four out of the six are at their old employment. One is still in the hospital and another in a sanatorium. 3. What proportion of cases with chest wounds develop pulmonary tuberculosis at a later date? The number of such cases is exceedingly small. It is not advisable to rely on physical examination. A careful scrutiny of the sputum for tubercle bacilli and a

thorough X-ray of the chest for the presence of a foreign body should accompany every examination. 4. What are the factors which influence the onset of the disease after trauma? Sergent says that the confined atmosphere, the insomnia resulting from pain and the prolonged suppuration had more to do with the incidence of phthisis than the original trauma. Our duty to the wounded men is not over when the temperature is normal. The septic chest is just as much in need of rest and exercise as the tuberculous chest. Breathing exercises safeguard against collapse of the lung, especially where the chest has been repeatedly aspirated.—*Traumatic Pulmonary Tuberculosis, J. B. McDougall, Tubercle, May, 1920, 1, 324.*

Infection and Predisposition in Tuberculosis.—By scrofulous diathesis and lymphatic temperament older writers meant a special state of the body or of the constitution which rendered an individual specially liable to local affections, such as scrofulous glands, white swellings, cold abscesses, lupus, etc. This constitutional state was supposed to be generally hereditary. The demonstration by Koch of a causal relation between the tubercle bacillus and scrofulous lesions does not prove that certain constitutional states have no predisposing influence upon tuberculous infection. Predisposing factors may be extrinsic or intrinsic, the former applying to those whose surroundings, occupation or mode of life expose them more frequently than other people to infection; the latter, to a lowering of resistance by deteriorating influences such as injuries, inhalation of dust, intoxication, disease, starvation, fatigue or some inherited defects. Evidence of latent or occult tuberculous infection of the cervical, mediastinal, bronchial and mesenteric glands was found in a large proportion of cases. Postmortem examination of 40 children under four years of age, in whom no clinical evidence of tuberculosis had been discovered, showed definite pathological evidence in 8. While according to Laennec, a supposition of heredity was permitted when the repetition of a number of cases occurred in the same family, Villemin showed that it should not be accepted as evidence without making reserves in favor of cohabitation and of other circumstances favoring the transmission of tuberculosis by contact. *It is better to attach too little than too much importance to the determining influence of predisposition.* We can hope to control tuberculosis permanently only if we take *comprehensive and thorough measures against infection,* but in doing so we must keep in mind that there are predisposing circumstances which call for special measures.—*Infection and Predisposition in Tuberculosis: A Summary of Some of the Views Held During the Last 100 Years, S. Delépine, Brit. J. Tuberc., April, 1920, xiv, 60.*

Influenza and Tuberculosis.—The records of the Ohio State Sanatorium show that epidemic influenza has had a decided etiologic relation to tuberculosis. Forty per cent of 615 tuberculous patients, admitted to the sanatorium since 1919, attributed their active tuberculosis symptoms to influenza. Of the 249 patients, 67 per cent had a negative tuberculous history prior to the epidemic of October-December, 1918, as far as could be determined, while in 33 per cent (or 13 per cent of total admissions) classified as reactivated, a definite or suspicious history of a previous tuberculosis could be elicited. Sixty-two per cent of the entire group had positive tuberculous sputum. A feature of the activated case was that 40 per cent had a nonsymptomatic period averaging five months following influenza, during which, in many instances, the patient returned to work. The tendency in these cases was toward a delay in diagnosis by ascribing the tuberculous symptoms to bronchitic sequelæ of influenza and therefore supposedly benign and temporary. These statistics are also quite uniform for the Missouri State Sanatorium and the North Carolina State Sanatorium. The Ohio State Sanatorium, with a patient population of 185 was entirely free from influenza during both epidemics. During the 1918 epidemic no regulations were in effect. It is, perhaps, reasonable to suppose that these open cases have a considerable immunity to the associated organisms of influenza: it is also just as reasonable to presume that the open-air-hygienic regimen was a considerable factor in their protection.—*Pulmonary Tuberculosis as a Sequel of Influenza, S. A. Douglass and W. P. Brown, Ohio State M. J., July 1, 1920, xvi, 506*

Influenza in the Tuberculous.—Summary: (1) In an outbreak of influenza in the tuberculosis pavilion of the Montefiore Hospital during January and February, 1920, 28 out of 127 patients were affected. The proportion seems to be about the same as might be expected among nontuberculous individuals. (2) The clinical form of tuberculosis and the stage of the disease had no influence on the liability of the patients to contract influenza. (3) Of the 28 patients who contracted influenza 9 died, which is a higher ratio of mortality than is generally observed; and 22 developed bronchopneumonia, again

a rate much higher than is usually seen. (4) It seems that the liability to complicating bronchopneumonia varies with the epidemic. During the epidemic of 1918 a smaller proportion of the patients developed this complication and the mortality was lower. (5) The clinical course of the influenza resembled that seen in the nontuberculous. The liability to develop complicating bronchopneumonia bears no relation to the stage, clinical form or acuteness of the tuberculous process in the lung and pleura. (6) In nearly all of the patients who recovered the complicating disease had no appreciable influence on the tuberculous lung lesion so far as could be ascertained by physical exploration of the chest or on the subsequent course of the disease. (7) We cannot say that the anergic state brought about by influenza has had an influence on the incidence, course and termination of this disease in the tuberculous.—*Influenza in the Tuberculous, M. Fishberg and E. P. Boas, Am. J. M. Sci., August, 1920, clx, 214.*

Tuberculosis of the Eye in the Army.—Eight cases of tuberculosis of the eye found at Camp Travis are reported in detail. The occurrence of eye tuberculosis in men who have passed several physical examinations before being accepted for army service is to be explained by the fact that they were arrested cases in whom a focus became active under the increased physical and mental strain of the intensive training. The limited number of cases seen include new lesions and new lesions engrafted on old ones. Tuberculin was used for both diagnostic and therapeutic purposes. The men were returned to duty within a short time after the acute stage had passed, as it seemed inadvisable to keep them in the hospital idle and apparently in good health, in order to receive one tuberculin injection a week. Relapses are possible and should be carefully looked for; tuberculin treatment should be continued in civil life.—*Tuberculosis of the Eye in the Army, H. H. Stark, Am. J. Ophth., April, 1920, iii, 262.*

Importance of Tuberculous Laryngitis.—A more active interest in tuberculosis should be taken by laryngologists. There should be more thorough and uniform teaching of the diagnosis of this disease, and it should be carried on in such a way that the student will have opportunity to examine large numbers of incipient cases, and to see these repeatedly, and thus familiarize himself with the laryngeal image seen in tuberculosis as compared with that found in other allied conditions. Mullin suggests that a committee of laryngologists representing the various laryngologic societies may be formed to meet with a committee from the National Tuberculosis Association for the purpose of standardizing the literature and teaching of this subject, and with the further object of stimulating clinical investigations and pathologic research concerning this condition.—*Indifference of the Laryngologist Toward Tuberculous Laryngitis and the Tuberculosis Problem, W. V. Mullin, J. Am. M. Ass., July 31, 1920, lxxv, 300.*

Tuberculosis of the Thyroid.—The literature on the subject may be divided into three classes: (1) Reports of isolated cases usually of the so called primary type, in a number of which the clinical picture and pathological appearance of the gland had been modified by secondary infection and abscess formation. (2) Descriptions of the histological findings in thyroids obtained in routine necropsies of persons who had died of general miliary tuberculosis. (3) Studies based on reviews of the pathology of simple and exophthalmic goitres. Mosiman's report brought out the striking relationship between hyperthyroidism and tuberculosis of the thyroid. This association is evidently not a coincidence; either a hypertrophic thyroid is rendered more susceptible to invasion by the tubercle bacillus or the infection stimulates the parenchyma to an abnormal activity and is thus indirectly responsible for the hyperthyroidism with its attendant symptoms. Although the great majority of hypertrophied thyroids are not tuberculous, any infection which may even in a few instances be an etiological factor is of interest in dealing with a disease, the cause of which is so shrouded in mystery. Few, if any, of the cases of tuberculosis of the thyroid which have been reported were diagnosed previous to the microscopic examination of the glands. Seven cases are briefly reported from the Mayo Clinic. The condition was not suspected in any of them previous to operation. They are divided into three groups: (1) Cases with high degree of hyperthyroidism. (2) Those with moderate degree of hyperthyroidism. (3) Those in which hyperthyroidism was mild or absent. The greater the tuberculous involvement, the less severe the toxic symptoms. All cases of tuberculosis of the thyroid are secondary to some focus elsewhere in the body, although none were discovered in the 7 patients.—*Tuberculosis of the Thyroid, W. A. Plummer & A. C. Broders, Minn. Med., June, 1920, iii, 279.*

Tuberculosis of Pulmonary Lymph Nodes in Infancy.—In this form of tuberculosis the human type of tubercle bacillus

is almost always the cause, the bovine type being seldom found. Heredity is of no importance in the etiology and no specific diathesis can be made out. The pathways of infection, in order of their importan e are the respiratory tract, the digestive tract, the nasopharynx and the skin. The blood stream is only a means of transportation. The disease presents itself first in the cervical and then in the tracheobronchial lymphnodes and from there invades the lung tissue. Symptoms are divided into three groups: general, local and localized at a distance. The X-ray and clinical laboratories are a great help in the diagnosis. The prognosis is most grave in breast infants. It is influenced by environment, intercurrent diseases and complications. The treatment is based on the familiar hygienic-dietetic-rest schedule. Tuberculin is of great value. Best results are obtained under sanatorium regimen.—*Tuberculosis Gangliopulmonar en la Infancia, J. Garcia del Diestro, Arch. Espanol. de Tisiolog., May, 1920, i, 257.*

Tuberculous Meningitis with Recovery.—Although tuberculous meningitis is generally fatal, a few cases are on record which show that recovery is possible. A woman, aged thirty-seven, had a tuberculous kidney removed twelve years previously, but had been well since. The first symptoms of meningitis were pains in the limbs and intense headache. On admission to the hospital the head was somewhat retracted, neck and legs stiff, Kernig's sign present, and reflexes normal. Lumbar puncture, performed about three weeks later, showed a clear fluid under pressure, containing tubercle bacilli. For thirteen weeks, the general condition varied between de irium and coma, with signs of distress and headache. The temperature was of an irregular intermittent or remittent type, reaching 102° to 103° in the evening. The pulse was irregular. In the fourteenth week, the temperature dropped, and a slow convalescence began. By the nineteenth week, the patient was taking full nourishment; and in the twenty-eighth week she was disch rged perfectly well in every way. Lumbar puncture was first performed in the fourth week, and was repeated in the fifth, sixth, and eighth weeks. The first punctures relieved the symptoms of intracranial pressure, but the last gave no relief, and the case was regarded as hopeless. It is very probable that recovery was aided by the earlier puncture.—*A Case of Tuberculous Meningitis with Complete Recovery, H. Barber, Brit. M. J., May 1, 1920, 601.*

Is Tuberculous Meningitis Curable?—Harbitz cites evidence from the literature that tuberculous meningi is can pass into a phase of fibrous transformation which results in the complete cure of the active disease. Rössle has reported a case of chronic tuberculous meningitis in a woman of thirty-seven with final fatal coma after seventeen months, and Harbitz here describes a similar chronic case with a five and possibly eight months course in a man of thirty-eight with necropsy findings showing mild tuberculous meningitis just entering a phase of anatomic healing. Another feature of the case was the spreading of the infectious process along the blood vessels into the brain and spinal cord, thus presenting the picture of diffuse tuberculous encephalitis and myelitis. In 60 per cent of cases of tuberculous meningitis, the patients are infants, and in them it is invariably fatal. The instances of a chronic course and recovery are nearly all in adults, the resisting powers or increased immunity aiding in the struggle against the infection. Epidemic cerebrospinal meningitis often entails hydrocephalus and changes in the brain, with mental disturbance. But tuberculous meningitis seems to escape this tendency. If the patient recovers he is not left with defects. Lumbar puncture and tuberculin treatment may contribute to the favorable outcome. In conclusion Harbitz cites a case from Overland's practice in which a girl of about seven had long presented symptoms of tuberculous meningitis, but finally recovered and in time married and has borne two children.—*Kan en tuberkulos meningit vaere en helbredelig sygdom? F. Harbitz, Norsk Mag. f. Laegevid, July, 1920, lxxxi, 644.*

Bovine Infection in Tuberculous Meningitis.—Forty-eight strains of tubercle bacilli were isolated from the cerebrospinal fluid of 48 cases of tuberculous meningitis. For primary cultivation of all the strains, Dorset's medium with and without the addition of glycerine was used; for secondary cultures, glycerine egg. Human strains gave a luxuriant growth on glycerine egg, while the bovine strains grew best on plain egg. While a dry growth is characteristic of human strains, and a moist growth of bovine, this is not alone sufficient to distinguish between the two. Rabbit virulence tests of moist strains are necessary to confirm their bovine character. Of the 48 strains tested, 3 proved to be of the bovine type.—*Incidence of Bovine Infection in Tuberculous Meningitis, N. Novice, J. Med. Res., January, 1920, xii, 239.*

Tuberculosis of the Breast.—One case of tuberculosis of the breast is reported in a woman of forty-four, with a history of pulmonary tuberculosis, but no symptoms for five years. The breast lesion was a small tumor which developed after a bruise; there was one small gland in the axilla, but without tenderness. A radical operation was done. The breast showed a caseous area in its centre, as did also the gland. No tubercle bacilli were found in the tissue, but sections showed typical tubercles with giant cells. The patient made an excellent recovery and after eighteen months shows no symptoms of recurrence. Tuberculosis of the breast is undoubtedly rare. It may be either primary or secondary. Slight trauma is usually an exciting cause, as in the case described. The characteristic symptoms are the rapidity of the disease process (the patient was operated within a month after the initial symptoms), early fistula formation, involvement of lymph nodes and pain when inflammation exists. The treatment is breast amputation and excision of the affected glands. The prognosis is good where the breast lesion is primary; in secondary cases it depends upon the primary focus.—*Tuberculosis of the Breast, E. P. Hamilton, Surg. Gynec. & Obst., June, 1920, xxx, 567.*

Tuberculosis of the Joints.—Thirteen cases operated for joint tuberculosis are reported. All were of an advanced character in which conservative treatment had failed to cure. In every case the diagnosis was established beyond a doubt before operation. Radiography and the subcutaneous tuberculin test were used as diagnostic aids. In all cases a preparatory period of treatment extending from one week to two months gave opportunity for closer observation. The patient's general resistance was built up by fresh air and feeding. In most cases tuberculin treatment was also given according to Sahli's method. Whenever feasible, joints were operated under Esmarch constriction; Kocher's technic was generally followed in making incisions. If the disease was confined to the synovial membrane, this membrane alone was removed, avoiding complete ankylosis. If the bone was involved, however, the bone ends were exposed, diseased tissue carefully removed, and the bones placed in good apposition. In every case iodoform powder, previously boiled for half an hour in a 1 to 500 bichloride solution, was rubbed into the entire wound surface, and the bone and the soft tissues, and the superfluous part washed away with physiological saline solution. A plaster of Paris cast was put on before the Esmarch bandage was released. The wound was drained by rubber tubes surrounded by washed-out iodoform gauze strips, which were removed through windows in the cast within a week. The first cast was quite heavy and was worn from four to six weeks, after which time patients with lesions in the lower extremity were allowed to leave the bed, wearing a lighter cast. This second cast was worn for two or three months. A much shorter time was needed after operations on the upper extremities. No amputations were necessary. In a case of resection of the elbow joint, a second operation was done for fistula which resulted in a cure. The author regards Rollier's heliotherapy as of undoubted value in joint tuberculosis and believes that institutions should be established where this treatment can be used carefully and intelligently. As two to three years are necessary for a cure by Rollier's method, there may always be patients who cannot spend so long a time in an institution. In such cases operation may be preferable, as the ability to work with a painless limb will outweigh the drawback of an ankylosed joint.—*Tuberculosis of the Joints, G. Schwyzer, Surg. Gynec. & Obst., June, 1920, xxx, 581.*

Injection of Tubercle Bacilli into the Metaphysis of the Long Bones in Animals.—In order to study the cellular reaction of bone to tuberculous infection a series of experiments was made with rabbits and guinea pigs. The animals were given 20 cc. of a 1 per cent solution of trypan blue intravenously, and, two days later, one or two drops of a physiological salt emulsion of tubercle bacilli were injected through a trephine opening in the metaphysis of the tibia. Bovine bacilli were used in rabbits, human bacilli in guinea pigs. The animals were killed at varying intervals, generally in three to nine days, and portions of the bone removed and fixed in formaldehyde. The marrow was then removed, embedded in paraffine and stained. In all the animals it was possible to demonstrate either the bacilli, definite tubercles and giant cells, or diffuse caseation, depending on the length of time the animal lived after infection. Animals killed three days following infection showed no bone lesions macroscopically. Under the low power the lymphoid cells were decreased in number and reticulo-endothelial cells more numerous near the trephine opening. With higher magnification, a large number of leucocytes showed nuclear degeneration, while the reticulo-endothelial cells contained two or more nuclei, were rounded in shape and lay free in the marrow. In stained sections it was possible to demon-

strate one or more tubercle bacilli in the clear areas, evidently vacuoles of these cells. In later stages of infection, groups of reticulo-endothelial cells were seen, consisting of ten to twenty cells, containing tubercle bacilli and undergoing the changes described. It could not be definitely determined whether these cells had proliferated in situ or wandered to the point of infection. Probably both these methods of increase occur. A few giant cells of the Langhans type were seen, which also contained acid-fast bacilli. In animals allowed to live a month after infection, extensive tuberculous lesions were found in the infected bones, consisting of broad areas of caseation surrounded by granulation tissue. The experiments indicate that the difference between these localized tuberculous lesions, and the diffuse lesions seen in pyogenic infections are due to peculiarities in the infected tissue, the bone marrow. This tissue in the metaphyses of long bones as contrasted with the fatty marrow of the diaphyses, is rich in the cells that are especially concerned in the reaction to infection with tubercle bacilli.—*Early Changes Following the Injection of Tubercle Bacilli into the Metaphysis of the Long Bones of Animals, J. Oliver, J. Exper. Med., August, 1920, xxxii, 153.*

Tuberculosis of the Genitourinary Tract.—Tuberculosis of the kidney presents many difficult problems, some of which are discussed. The most prominent symptom is irritability of the bladder. In all cases where the disease is near the kidney pelvis there is a discharge of bacilli into the urine. In many cases the diseased kidney can be felt and tenderness over the bladder is occasionally elicited. Urination is frequent. The urine is usually light colored, turbid, and contains traces of albumin, many pus cells and usually a few red cells. The importance of radiographs in the diagnosis of renal tuberculoss is being felt more and more, and cystoscopic examination is of prime importance. The anesthesia of choice is gas and oxygen. The diseased kidney is to be removed. The question of treatment of the ureter is still in debate. The author personally cuts the ureter where it is most convenient and treats the end with carbolic acid and alcohol and drops the ureter back to take care of itself. He prefers not to drain. The irritability of the bladder begins to improve. If, at the end of a few months, the bladder has not regained its normal capacity, it can be improved by gradually dilating it once or twice a week with mercuric chloride, 1 : 50,000. The general hygiene should be looked after and the patient should sleep out of doors if possible. Tuberculosis of the bladder is always secondary to tuberculosis of the kidney. Tuberculosis of the penis is very rare. Tuberculosis of the epididymis is always associated with disease of the seminal vesicles and prostate. Most of these cases do well under hygienic treatment, fresh air, plenty of rest and good food.—*Diagnosis and Treatment of Tuberculosis of the Genitourinary Tract, A. H. Crosbie, Boston M. and S. J., July 29, 1920, clxxxiii, 134.*

An Unusual Case of Tuberculous Salpingitis.—This case is of interest because the condition was not recognized before operation, at the time of operation, nor even when the specimen had been removed. At the time of admission the diagnosis was tubo-ovarian abscess. After opening the abdomen the diagnosis was changed to tubal pregnancy, unruptured. Only after the mass had been cut open was the diagnosis of bilateral tuberculous salpingitis, chronic appendicitis and corpus luteum cyst of the right ovary made. The history of the patient is as follows: A married colored woman, aged nineteen, complained of pain, swelling and tenderness in the right lower abdomen. She had had pneumonia at fourteen and influenza at eighteen. Constipation had been present for many years. There was nothing of importance in the menstrual history. No leucorrhea had ever been noticed. The patient had been married for three years but had never been pregnant. Physical examination: Anterior and posterior cervical lymph nodes were enlarged. The lungs were normal. The abdomen showed definite tenderness all over the lower part, most marked on the right side. The body of the uterus was found to be in mid-position, of normal size and consistency but pushed over to the left side. Filling the right half of the pelvis and bulging into the pouch of Douglas and also into the rectum was a tense, smooth, cystic mass, adherent and tender. The urine was negative. Wassermann negative. A diagnosis of chronic pelvic inflammatory disease with abscess on the right side was made. Under ether the pelvic examination revealed the following: The body of the uterus was of normal size, in good position, and freely movable. On the right side were two distinct masses. The left ovary was slightly enlarged. The diagnosis made from this examination was tubo-ovarian abscess. Operation: A pelvic puncture was done but no fluid was obtained. A midline abdominal incision was made, the uterus was elevated and found free from adhesions, of normal size and consistency. By careful dissection the upper mass on the right side was released together with the entire length of the Fallo-

pian tube. The latter with a wedge of uterine cornu was resected without rupturing the lower mass. This was by far larger and proved to be a corpus luteum cyst. Only a portion of the cyst was excised together with the right ovary. On the left side, the tube alone with a wedge of uterine cornu was removed. The appendix was then resected. The diagnosis now given was tubal pregnancy, unruptured. The gross and microscopic examination revealed throughout the stroma typical tubercles of varying sizes. Only then the correct diagnosis was made.—*An Unusual Case of Tuberculous Salpingitis, J. P. Greenberg, Bull. Johns Hopkins Hosp., April, 1920, xxxi, 132.*

Venous Murmur, Probably of the Azygos Major, in a Consumptive.—A patient with pulmonary tuberculosis presented a venous murmur, heard best at the level of the second dorsal vertebra, between the vertebral column and the right scapula, and heard distantly at the right infraclavicular fossa. The murmur was continuous and was intensified with systole and on deep breathing. From its location, its intensity and its absence in the jugular and subclavian veins, it is most probable that it originated in the only other vein of any size in that vicinity, namely the azygos major. The cause of the murmur is probably compression of the vein by enlarged tracheobronchial lymph nodes or deviation of the course of the vein due to pleural adhesion.—*Caso Rarisimo de Soplo Venoso, probablemente de la Azigos Mayor, en un Enfermo de Tuberculosis Pulmonar, M. Darder Rodes, Arch. Espanol. de Tisiolog., May, 1920, i, 217.*

Syphilis and Tuberculosis.—Mariño and Mussio have sometimes obtained surprisingly favorable results in the treatment of tuberculous patients when tentative treatment for syphilis was given to supplement the usual measures. Even where there is nothing to suggest syphilis asthenia, status lymphaticus or other endocrinopathy may be manifestations of an inherited or acquired taint, and justify mercurial or other treatment with small doses. This is liable to be of inestimable value when the parents are robust and free from lead poisoning, malaria, etc., which might have affected their offspring, the probability of inherited syphilis as responsible for the endocrinopathy in such conditions being particularly evident.—*Apuntes clinicos sobre sifilis y tuberculosis, E. E. Mariño and J. C. Mussio Fournier, Sem. Med., January 29, 1920, xxvii, 170.*

Hookworm and Tuberculosis.—Information with regard to mistaken diagnosis in the case of tuberculosis and hookworm is contained in a preliminary report received by the War Department on a study conducted by army medical men at General Hospital No. 19, at Oteen, N. C., where tuberculous patients are treated. The report says that many cases which had been diagnosed as tuberculosis on further examination showed signs of hookworm, and under treatment for hookworm the patients improved greatly. Accurate figures as to the number of hookworm cases which had shown all the evidences of tuberculosis will soon be compiled. It is estimated that about 10 per cent of the patients suffer from hookworm at the time of admission and that about 2 per cent do not have tuberculosis.—*News Item, N. York M. J., August 7, 1920, cxii, 197.*

Syphilitic and Tuberculous Joints.—The author has observed more than two hundred cases of chronic destructive joint disease diagnosed as tuberculous, but which were evidently syphilitic because of their response to mercury and potassium iodide, suggestive family histories, and dental stigmata in many of the cases. In 51 of the cases a diagnosis of tuberculosis had been made by 26 surgeons, and the patient had been under treatment for six months to twenty-five years, yet all showed marked improvement under the use of mercury and potassium iodide, and many became symptom free. The symptomatology and radiographic findings of the two diseases are so nearly alike that it is often impossible to make a differential diagnosis. Besides, in such late manifestations of inherited syphilis the Wassermann reaction is rarely positive. In doubtful cases, the best method is to push antisyphilitic treatment to the limit of tolerance. The orthopedic treatment of the two conditions differs somewhat. In tuberculosis a firmly ankylosed joint is generally desirable, as tissue regeneration is not to be expected; but in syphilis replacement of necrotic bone areas may occur. Hence, weight-bearing joints should not be maintained indefinitely in plaster casts, but removable braces should be used, that will allow motion when patients are lying down; also removable splints for the upper extremities. Five cases are reported in detail illustrating the value of specific treatment in chronic joint disease with inherited syphilis, that had been diagnosed and treated as tuberculous,—*Syphilitic and Tuberculous Joints, P. W. Roberts, J. Orthop. Surg., May, 1920, xviii, 265.*

Treatment of Pulmonary Tuberculosis.—The author disputes the claim that sanatorium treatment has failed and that we

have no cure for pulmonary tuberculosis. The most successful treatment thus far is that which is lauded under the heading of "rest and exercise treatment" or "treatment by controlled autoinoculation"—the bedrock of the sanatorium. The most frequent cause of failure is the delay in diagnosing the disease at a reasonably early stage. So long as the fatal reliance on the stethoscope as the instrument par excellence for early diagnosis remains, so long will deep-seated or hilum tuberculosis be constantly missed in its earlier stages. Furthermore, patients often fail to consolidate their gains after departure from the sanatorium. The so called rest and exercise treatment has two classes of followers, first, the German school favoring the "Liegekur" or absolute rest plan, led by Brehmer, Dettweiler, Cornet, Turban, Penzoldt and in America by Trudeau, and the systemic exercise therapists (consisting of graduated walks) favored especially by Walther and Paterson. Common agreement rules that rest is the right treatment for all cases of decided fever. Both rest and exercise are of vital value, each in its proper place. For very active tubercle with a tendency towards caseation rather than fibrosis, careful avoidance of autoinoculation, to the exclusion as far as possible of all reactions, is the line of treatment which should be followed. Fever must not be made the sole indication, as is perhaps too often done, but the type and extent of lesion should also be taken into account. At the other end of the scale are cases with a marked tendency towards fibrosis and healing, and it is among these that exercise pushed even to decided autoinoculations in some cases, is not only safe but beneficial. Even among these however, definite hours of rest must be enforced. The whole of this controversy between the various schools is the absolute need in tuberculosis of individual treatment and the avoidance of the fetich of a fixed routine. Chronic cases of pulmonary tuberculosis may also derive benefit from reactions produced by other means. Certain heavy metals, particularly copper and gold and to a lesser extent nickel and cobalt, are held to exert a specific action on tuberculous tissue. They exert a two-fold action, by destruction bit by bit of the tuberculous focus, and a stimulation of immunity by release of antigen. The Lutons used preparations of the salts of copper internally and externally and found that focal and general reactions followed these preparations with subsequent general improvement. The latest intravenous preparation is dimethyl glycocol-copper used with good results by Bodmer, Sorgo, Schlau and Landolt. The treatment should be confined to chronic and afebrile cases only. Von Münch used copper formate intravenously with good results. For skin tuberculosis a cinnamic acid-copper-lecithin preparation called lecutyl is used locally. While different observers report variable results, the general agreement seems to be along the following lines: 1, Copper salts possess a selective action for tuberculous tissues. 2. We are able to get copper into contact with tuberculous tissues by general administration and to cause both focal and general reactions. 3. Such reactions tend to be followed by local and general improvement, provided they are applied to selected cases, to the exclusion of acute, very active and progressive tuberculosis. The most important exponent of gold therapy is Feldt of Frankfort who succeeded in turning out a gold cyanide preparation known as krysolgan which is administered intravenously in 10 per cent solution and claimed to be as near a specific as possible. It has been largely used in combination with therapeutic tuberculin. —*Some Thoughts on the Treatment of Pulmonary Tuberculosis, C. Riviere, Tubercle, August, 1920, i, 490.*

Heliotherapy in Surgical Tuberculosis.—Heliotherapy in surgical tuberculosis should be regarded merely as an adjuvant in conjunction with other conservative measures and in certain cases even radical measures. Sunlight stimulates and enlivens, and this therapeutic value is enhanced by its psychological effect. Rollier has brought the importance of insolation into special prominence although he is somewhat overenthusiastic. He claims that high altitude is essential with low atmospheric pressure, infrequency of winds, marked dryness of atmosphere, little fog, low rainfall, prolonged duration of sunshine, high actinic value of sunlight augmented by reflection from the snow, intensity of heat rays and pure air of high radioactivity. Some authorities advocate insolation at the seaside as the light effect is greatly increased by reflection from the sea. Most observers are agreed that sunlight when obtainable is preferable to light from artificial sources. Wieszner has demonstrated that the long-wave red rays possess not only strong bactericidal properties but also have the greatest penetration capacity, while the ultraviolet rays will not traverse the skin. The value of insolation may be summarized as follows: 1. Heliotherapy has a beneficial direct action which is bactericidal and useful in so far as it stimulates a suitable local inflammatory response. Too short-waved rays are dangerous as they may produce

superficial necrosis and should be screened if artificial light is employed. Local treatment is of value especially in cutaneous tuberculous lesions, lupus, ulcers, pustular eruptions and the like. 2. The remote beneficial effects of sunlight appear to be dependent on the ability of the skin to pigment satisfactorily after properly graduated exposure on as large an area of the body as possible. Failure or success in obtaining pigment formation furnishes us with the most valuable guide to prognosis in joint tuberculosis. Pigmentation is helpful according to Rollier by its tonic effect, its metabolic action, while most valuable in all cases perhaps its help in the treatment of sinuses and ulcers and in the elimination of the sequestra and its value in restoring mobility to healed joints fixed by fibrous ankylosis. 3. It is of great value in the after-treatment of patients. 4. It reduces the length of treatment required in cases that pigment satisfactorily. 5. It is often of most striking value in patients who are already improving—here it may be called a great accelerator of cure. Heliotherapy is useless for the treatment of patients who have no pigmenting power, except as regards the local treatment of superficial lesions, in cases of amyloid disease, in acutely septic cases with pyrexia and in patients suffering from complicating nontuberculous conditions in whom insolation is contraindicated. The author gives detailed instructions for the conduct of the sun treatment as employed in the Treloar Cripples Hospital at Alton, Hants. Excessive reactions should be avoided and insolation should be gradually applied. While a patient is undergoing the treatment he will derive the greatest benefit if the normal course of his existence is interfered with as little as possible.—*The Rôle of Heliotherapy in Surgical Tuberculosis, H. Gauvain, Tubercle, June, 1920, i, 401.*

Light Treatment of Tuberculosis.—Strauss obtained poorer results in open tuberculosis of bones and joints than Rollier. Therefore in a mixed infection he always found it first necessary to operate and then follow it with light treatment especially in affection of lymph nodes. Lupus gave good results under general radiation. Good results were obtained in pulmonary tuberculosis of a mildly active stage, better from sunlight than from X-ray, and best from a combination of both. Pigment is the factor in sunlight treatment and one should try to produce it. Best results were obtained in brunettes.—*Über Strahlentherapie der Tuberkulose bei der östlichen Bevölkerung, S. Strauss, Strahlentherapie, March 5, 1919, ix, 81.*

Heliotherapy and Phototherapy.—Vevey uses a heliophore which consists of a large glass lens, doubly convex, mounted in a linen barrel-shaped apparatus held on a tripod, so that the sun rays are caught and brought to a focus from 6 to 8 inches in diameter, depending on the amount of heat obtained. This intensifies the sun rays, allows the warm end of the spectrum to penetrate, and shuts out most of the other rays. He applies this treatment in every type of tuberculosis and gives enthusiastic reports. Cervical glands disappear after five hours' exposure. Of 263 cases, 85 of them with suppuration, all rapidly improved and very few relapsed. His pulmonary cases never had hemoptysis, but he is careful to keep his patients on a vegetarian diet. In laryngeal tuberculosis the pain stops and the ulcerations heal rapidly. The heat rays accomplish the results. Sixty per cent were cured.—*Heliothérapie et photothérapie, S. A. de Vevey, Bull. gen. d. hérap., April to September, 1918, xxii–xxiv, 1.*

Quartz Light in Pulmonary Tuberculosis.—The author studied eleven cases that had seventy periods of quartz light treatment, devoting special attention to blood pressure, pulse and respiration. The results were a lowering of blood pressure in the majority of cases, but no conclusive change in the pulse rate or the respiratory rate was noted.—*Über einige Wirkungen der Quarzlampenbestrahlungen bei Lungentuberkulose, H. Austgen, Beitr. z. Klink. d. Tuberk., July, 1919, xlii, 18.*

Effect of Quartz Light on Internal Organs.—Mice were exposed to quartz light up to twelve and fourteen hours. At the end of this time necrosis of the ear and marked irritability developed, so that the time of exposure was not extended. Very definite changes took place in the internal organs of these animals, with necrosis and hemorrhage and dilatation of vessels, probably due to the direct penetration of the ultraviolet rays. A few animals that were exposed to the red lamp did not develop these changes.—*Experimentelle Studien über die biologische Wirkung des Quecksilber Quarzlichtes auf die inneren Organe, R. Gassul, Strahlentherapie, March 5, 1919, ix, 232.*

Ray Therapy in Pulmonary Tuberculosis.—The quartz light is valuable in stationary, nonprogressive cases of pulmonary tuberculosis, especially if used in combination with X-ray treatment. All progressive and acute destructive cases, and even those with merely a tendency to fever, are not suitable. It is necessary to dose the

treatments accurately although sunlight is much more dangerous than the quartz lamp. Healed cases that were overexposed to sunlight, redeveloped activity. The quartz lamp works by relieving the lungs of the blood, and then allowing the blood to return in time. At times the heat rays were added to the quartz light. Bacmeister speaks of 700 stationary cases treated with the X-ray. He advises extreme caution. X-ray technic is discussed in detail.—*Über die Anwendung der Strahlentherapie bei der menschlichen Lungentuberkulose, A. Bacmeister, Strahlentherapie, September 10, 1919, ix, 556.*

Ultraviolet Rays in Scrofulous Eye Conditions.—The entire body of the patient was exposed to quartz light; and the uviol lamp was locally applied to the open eye. They can be used singly or in combination. The curative results are good.—*Allgemeine und lokale Bestrahlung mit ultravioletem Licht bei skrofulösen Augenleiden, A. Passow, Med. Klin., May 10, 1919, xxxiii, 1307.*

Light and its Use.—The quartz lamp is not a good substitute for sunlight because it contains too many of the short irritating ultraviolet rays. The carbon arc lamp is much better, as this contains the red end of the spectrum which is absent in the quartz light, and the red end is important. The ultraviolet rays are directly absorbed by the cell protoplasm and act in this way, but the red rays make the cells sensitive so that they absorb the ultraviolet. The warm rays dilate the skin vessels and can directly affect the hemoglobin. The pigment developed in the skin cells also acts as a sensitizer. One cannot use the quartz lamp for sufficiently long periods of time because the short ultraviolet rays present are too irritating for long exposures. The author mentions the various spectra and also the advantages and disadvantages of the various modifications of the carbon arc lamp.—*Licht und Lichtbehandlung, F. Schanz, Strahlentherapie, September 10, 1919, ix, 544.*

High Altitudes and Heliotherapy.—The writer mentions correspondence held between himself and Rollier in 1904 after the sunlight treatment of surgical tuberculosis had been started. He discussed various methods of measuring the intensity of the different parts of the sunlight spectrum, also the measurements of direct sunlight and diffuse daylight, the amount of sunshine and the warm and ultraviolet rays, the influence of the atmosphere and the time of the year and the altitude. Langley's percentages of the different rays penetrating atmospheres at high and low altitudes are given. The greatest amount of ultraviolet radiation occurs in the summer time and after that in the spring, as is shown by the amount of pigmentation developed at that time. This is in contradiction to Dorno who says that after the summer, the greatest amount of radiation is in the fall and then the spring and winter. He emphasizes the importance of the ultraviolet rays. The warm ray plays a part in setting up a hyperemia. From comparisons of the light intensity near the shore, in the Alps, and in the desert it appears that high altitude is the location of choice, and second to that is the sea coast. The advantages of high altitude are greater intensity of ultraviolet radiation; increase of red cells, hemoglobin and metabolism; freedom of the air from moisture; dust and bacteria; cold, dry, snowy winters; summers not too hot; scarcity of wind; protection by peaks; and a great amount of light.—*Das photochemische Klima, im besonderen des Hochgebirges und seine Beziehungen zur Heliotherapie, O. Bernhard, Strahlentherapie, September 10, 1919, ix, 520.*

Thoracoplasty.—The need of a suitable method of operation for the many patients on whom the pneumothorax treatment could not be performed prompts the author to replace the extensive and dangerous Friedrich operation of extrapleural thoracoplasty or total resection of the bony chest wall by a smaller operation with the removal of the hindmost pieces of ribs only, under local anesthesia. This has changed an operation having a mortality of 25 per cent to one of comparative safety. Indications for thoracoplasty have been the same as those for pneumothorax treatment, no patient being operated on in whom a pneumothorax had not been previously tried without result. The operation is contraindicated in severe tuberculous disease outside the air-passages, in other severe systemic diseases threatening the patient's life, in great debility, in acute and rapidly progressive cases, and in intolerance to novocaine-suprarenin. Most suitable for the operation are chronic fibroid cases without severe acute symptoms with more or less extensive cavities; cases of a sclerosing or destructive character in the lower lobe which usually have a bad prognosis and in which the pneumothorax method, though practicable, often fails; those which relapse after resorption of the gas following repeated artificial pneumothorax; and those with extensive pleural adhesions. Patients whose heart and lungs have become accustomed to compression stand thoracoplasty particularly well. The line of incision begins posteriorly a few cm.

away from the spine and running parallel to it, thence descending downward and forward along the tenth or eleventh ribs as far forward and upward as necessary. A 0.5 per cent solution of novocaine-suprarenin is injected subcutaneously along the line of incision. Each intercostal nerve is anesthetised as well as the intercostal space. An average of 130 to 150 cc. of the solution may be used during an operation without any bad effect. The ribs may then be laid bare without pain and stripped of their periosteum. If necessary the operation is done in two sittings removing the lower ribs first in order to avoid aspiration of the secretion of cavities into an uncompressed lower lobe. The resected ribs include the first to the eleventh, cutting the posterior ends of the ribs as near the transverse processes as possible. It does not greatly matter how far the sternal end is carried forward. Total thoracoplasty is very exhausting to the patient and must be quickly performed. After operation the capacity of the half-chest was diminished to one-half or one-third of the other side and a convex scoliosis towards the diseased side nearly always develops. The influence of the operation on the disease in successful cases is often very marked. Cough and expectoration markedly diminish or disappear, the bacilli in the sputum fare likewise, and the temperature gradually becomes normal. Very little dypsnea results from the operation. Stethoscopy reveals medium or loud râles in the larger bronchi due to incomplete compression. Of 40 cases operated on in Vejlefjord Sanatorium, Denmark, from October, 1916, to June, 1919, 12 were still in the sanatorium considerably improved, 4 died in consequence of the operation, 5 died of pulmonary tuberculosis in spite of the operation, the better lung being so affected as to render them hopeless, 2 patients were worse, and 4 improved. The remaining 13 were fully restored to health and able to work.—*Thoracoplasty in the Treatment of Pulmonary Tuberculosis, C. Saugman, Tubercle, April, 1920, i, 306.*

Surgical Treatment of Pulmonary Tuberculosis.—There are three main indications for operative treatment: 1. The quality of the individual resistance of the patient: We cannot measure the individual resistance of a patient but we know that is constant; therefore by watching the patient we can estimate it. It may be said that when the maximum total of resistance which can be obtained is insufficient to control the disease, surgical treatment, if practicable, is strongly indicated. It does not follow that if the maximum total is adequate for control, surgical treatment is unnecessary. 2. The character and extent of the mechanical changes: The most constant and characteristic change is the formation of fibrous tissue. So long as the shrinkage due to the fibrosis is limited to an amount which can be easily compensated for by surrounding changes, the case may be regarded as in the earlier stages. But when the shrinkage has passed beyond this limit, a progressive dilatation and distortion of the bronchial tubes take place, producing a condition known as secondary bronchiectasis. Medical treatment cannot do much to compensate for the abnormal mechanical conditions which are responsible for this. By surgical treatment it is possible not only to diminish but even to abolish the symptoms due to these secondary changes. It can diminish the symptoms of bronchial dilatation and distortion. 3. The arrest of certain special symptoms, haemorrhage and pain: Surgical treatment can be used to arrest pain by separating the two pleural membranes from each other by the injection of gas into the pleural cavity. Movements of the lung can be reduced by keeping the patient at absolute rest in bed, but this does not abolish the normal movements of respiration and the movements associated with coughing. The methods of treatment devised to abolish movements of the lung are precisely those most suitable to compensate for the abnormal mechanical changes in the lung and in the chest, and are also most efficient for the arrest of haemorrhage. The beneficial effects of lung collapse are well known. This method cannot be used in cases where indications of a failing heart exist or albumen is constantly present in the urine. There are two methods of obtaining collapse of the whole of the lung—nitrogen displacement (artificial pneumothorax) and rib mobilization. There are two methods of producing collapse of a portion of the lung—local replacement by foreign bodies and paralysis of the diaphragm by section of the phrenic nerve. Artificial pneumothorax is not a serious undertaking from the patient's point of view. When collapse of the lung by rib mobilization is considered, the selection of the case requires the greatest care and consideration. The operation for the collapse of the chest wall and of the lung is done in two stages. At the first stage some three to five cm. of the posterior parts of each of the first nine or ten ribs are removed. At the second stage, the costal cartilages of the first to the seventh rib inclusive are removed. The anaesthetic is of great importance. Ether must not be given to patients with pulmonary tuberculosis. Chloroform is more suitable. The interval of time which elapses between the

first and second stages depends upon the degree of reaction after the first operation. The greatest advantage is obtained if the second can be done ten days after the first stage. Partial collapse by replacement by a foreign body is applicable to those cases in which the disease is localized to the upper lobe. An incision is made through the third intercostal space down to the parietal pleura. This is stripped off the inner surface and of that part of the chest wall overlying the upper lobe. The collapsing part of the lung leaves a considerable space between it and the chest wall which is then filled by some foreign unabsorbable substance. Paralysis of the diaphragm by section of the phrenic nerve is of value in cases where there is considerable fibrosis in the lower lobe and in which bronchial dilatation and distortion have developed. As to the division of the first costal cartilage, the balance of evidence is against the probability of the operation producing any material benefit in cases of apical tuberculosis.—*A Consideration of the Treatment of Pulmonary Tuberculosis by Surgical Intervention, H. M. Davies, Tubercle, February, 1920, i, 15.*

Artificial Pneumothorax.—The end results are presented of 54 advanced cases running over a period of eight years from the Berks and Bucks sanatorium, England. All were advanced or acute cases with unilateral involvement. In 12 it was not possible to establish the treatment because of pleural adhesions. Ten of these have subsequently died. In 42, treatment was feasible. Twenty-one of these subsequently died. Twenty-two of the entire number showed a marked and definite improvement. Of the latter, 8 are dead and 1 is going downhill, while 13 returned to their former occupations or to a moderately useful life. These results were obtained when all else seemed hopeless (2 arriving in a dying condition) and even the 8 that died enjoyed a period of betterment for a year or more with subsequent relapses. The treatment has its best chance in a sanatorium where encouraging object lessons are always on hand as patients are helped more by seeing good results "in the flesh" than by any explanation of theory. No other procedure offers as good a hope of improving the dreary lot of an advancing case of phthisis as does the successful induction of an artificial pneumothorax.—*The Value of Artificial Pneumothorax, Esther Carling, Tubercle, June, 1920, i, 411.*

Necropsy after Induced Pneumothorax.—Necropsy showed the complete cure of the tuberculous cavity in the lung treated by induced pneumothorax for thirty months. Death was due to intercurrent influenzal pneumonia in the other lung Slight tuberculous lesion in the latter had healed likewise. The healed tuberculous lesions were of the torpid, cheesy type. Burnand's experience indicates that the minimum period for effectual collapse therapy in advanced cases is two or three years. He adds further that fourteen of his twenty pneumothorax patients passed unscathed through intercurrent influenza; six died.—*Tuberculose cavitaire chronique; pneumothorax artificiel; decès par grippe; autopsie, M. R. Burnand, Bull. d. l. Soc. Méd. d. Hôp., November 21, 1919, xliii, 983.*

Treatment of Surgical Tuberculosis.—The combined treatment of surgical tuberculosis by sunlight, passive hyperemia and the internal administration of iodine in the form of sodium iodide gave best results. It is impossible to apply surgical treatment in all cases of bone, joint and gland tuberculosis because of the large number and wide extent of the foci, together with the weakened condition of the patient. The intensity of the sun rays at high altitudes and in the lowlands varies little; so also the period of treatment. Fixation bandages were not necessary. Tuberculin treatment gave best results in the beginning softenings of glandular tuberculosis in children; also in diseases of the bones and urogenital tract. Tuberculin however is not sufficient to accomplish permanent cures in these cases. With heliotherapy unusually severe tuberculosis of the joints has been cured and adequate joint motion restored; patients sixty years old, with severe tuberculosis of the spine, have recovered. In the Hohenlychen surgical clinic in most cases, just after a tuberculous focus has cleared up or even before, tuberculin treatment is instituted to prevent new foci. Sunlight treatment is applicable to all surgical tuberculosis.—*Zur Frage der Behandlung der äüsseren Tuberkulose, E. Kisch, Münch. med. Wchnschr., November 7, 1919, lxvi, 1283.*

Tuberculin Treatment.—Conclusions: In cases of chronic tuberculous ulcers, tuberculides, tuberculous sinuses associated with bone, joint or glandular disease or persisting after operation upon tuberculous foci (peritonitis, salpinigitis, epididymitis, mastitis) tuberculin gives satisfactory results. It may be administered in dispensary and clinic while the patient continues at work. Many of the patients came for treatment at the noon hour from factories and workshops. Small doses apparently give most satisfactory results. B.E. or O.T. were used in a 1 in

100,000 dilution and the dose varied from 0.2 cc. of this dilution to 1 cc. It is a valuable adjunct to surgical measures. The similarity of certain tuberculous specific ulcerative skin conditions is to be borne in mind and a Wassermann test is advisable before undertaking treatment.—*Tuberculin in Treatment with Special Reference to Non-Pulmonary Tuberculosis, J. H. Elliott and C. Sheard, Jr., Transact. Canad. Assn. for the Prev. of Tuberc., xviii, 64.*

Atoxic Antituberculosis Vaccine.—The immunizing process stimulates cellular activity and thereby makes demands on the body which must be met by remineralization and recalcification to compensate for the loss of carbonates and phosphates of lime and magnesia, iron and silica in the lungs and most of the organs of the consumptive. According to Robin the coefficient of demineralization of the healthy person is 30 per cent; of the consumptive in the primary stage, 37 per cent; in the secondary stage, 51.46 per cent; in the third period, 29.64 per cent, the latter being smaller because the body then has little to lose; and in the more affected regions the demineralization as to silica goes as high as 50 per cent. The healthy portions are rich in phosphoric acid and potassium and poor in chlorine and sodium. There is not sufficient nitrogen in the lung for that which is destroyed. Recalcification increases organic resistance and aids in the fibrocalcareous transformation of tuberculous lesions. Other substances necessary for remineralization are potash, iron, silica and manganese. Rénon attributes the demineralization of consumptives to dyspeptic troubles with hyperchlorydra and acid fermentations, Robin to individual predisposition and to bacillary infection. After giving in detail the directions of Robin and Ferrier, the author lays down his own dietetic regimen. The diet of the consumptive should consist of wholesome, nutritious and easily digested food, adapted to individual needs, but not given to excess. Febrile conditions are best combated by a reduction of food. The food given should comprise 105 grams of protein, 50 grams of fats, 250 grams of carbohydrates and 24 cc. of alcohol. The tendency to-day is to feed the consumptive as the ordinary healthy individual, changing the quantity only according to the state of the digestion and nutrition. The patient should live in the country, if possible, in a large room with large windows with shutters to close at night so that he does not get the chill air direct. He should go to bed between 8 and 9 and arise between 7 and 8. A half hour walk after meals is recommended. Sports, games and tobacco should be avoided. Sexual intercourse is dangerous. Prophylactic measures must be very strict. Patients should use special pocket cuspidors, and should cover the mouth with a paper handkerchief when coughing. These should be burned after use. The table ware should be boiled for ten minutes in a solution of soda. Napkins should be sterilized before washing and the same should be done to clothing. Walls and floor of the room should be disinfected every three months.—*Atoxic Antituberculosis Vaccine; Remineralization and Recalcification, J. Davila, Sanidad y Beneficencia, July, August, September, 1919, xxii, 31.*

Occupational Therapy.—Suitable handicrafts taught under proper conditions to convalescent patients with tuberculosis are valuable in many ways. We are realizing more and more clearly the subtle reaction of the mind and spirit upon the body. Discouragement, worry, or grief lessen our vitality, whereas success, happiness and enthusiasm bring us new life and vigor. If this is true in health, how much more so is it true when physical and nervous resistance is impaired by illness? One of the hardest things about an illness is the patient's realization of loss of time, strength and usefulness. If we can lessen this feeling and make the invalid more cheerful by permitting him some occupation, we give him a chance to forget himself. He derives pleasure from this and recovers more quickly. A skilled teacher should be employed and she should be given a reasonable number of patients to teach and should have assistants to prepare materials and design the various articles to be made. The workroom should be cheerful and pleasing in color and decoration. Work done by the invalid should be good in form and color. Work badly planned and poorly executed reacts unfavorably upon the patient. Bed patients can learn to weave in raffia, cotton, silk, or wool, to cut leather for bags, belts, mats, and to make toys. The writer suggests that there be a visting occupational teacher association modelled on the plan of the visiting nurse association so that patients may be given this opportunity in their homes, in small hospitals and sanatoriums.—*Occupational Therapy and Tuberculous Patients, B. Thompson, J. Outdoor Life, August, 1920, xvii, 219.*

Occupational Therapy.—Occupation as a therapeutic measure has only in recent years been developed to the point of successful applicability to the sanatorium treatment of tuberculous persons. Of the four fundamental principles of the cure, namely, proper

food, fresh air, graduated exercise and rest, occupation is directly associated with the last two and indirectly with the food-factor, through its influence upon digestion. Since we know that rest is essential to successful treatment, we need only put the patient to bed to secure this requirement but the degree of rest secured will depend upon the extent to which muscular activity may be minimized and mental contentment promoted. Patients, undergoing treatment, think. Much of the success of the treatment depends upon what these thoughts are. Unfortunately, in many cases, this undirected thought leads to disaster. Worry, exaggeration of personal ills and uncertainty of the future are examples of a mental state opposed to rest. In this case occupational therapy acts as a sedative to the entire nervous system. Useful occupation increases self-respect and self-reliance. The Muirdale Sanatorium at Wauwatosa, Wisconsin, looks upon occupational therapy as indispensable to the morale and discipline of the institution. The patient considers occupation as a privilege and a denial of rights to the workshops as a punishment.—*The Value of Occupational Therapy in Tuberculosis Sanatoria from a Medical Administrative Standpoint, G. L. Bellis, J. Outdoor Life, August, 1920, xvii, 221.*

The Dispensary Treatment of Phthisis.—The following is derived from a four years study of tuberculosis in the county of Middlesbrough with a population of about 125,000 people. A patient is kept under observation till death or till he may be considered safe, e.g., till after two years of ordinary life without the display of any tendency to the increase of the tuberculosis incidence. Nurses are the keynote of this system. There should be one nurse to every 30,000 and one doctor to every 60,000. By this method, the death rate has been reduced from 95 deaths in 1914 to 69 deaths in 1918, excluding those below sixteen. The after care of patients is also considered. The total costs of the dispensary are somewhere between three and five pounds per case treated, whereas sanatorium treatment amounts to five times as much per patient. The whole question can be summed up as follows: 1. The dispensary system, properly carried out, should be the main line of defence against tuberculosis, as being both essentially efficient and economic. 2. Sanatoriums for early cases are valuable as a direct aid to dispensary treatment. 3. The theories of advanced tuberculosis should be reconsidered. 4. An effort should be made to find out how much acute pulmonary tuberculosis exists. 5. The reasons for the failure of early notification should be investigated. 6. The present form of statistics should be revised.—*The Dispensary Treatment of Phthisis. What it May Achieve, H. A. Ellis, Tubercle, February, 1920, i, 219.*

The Discharged Soldier and Sanatorium Treatment.—The tuberculous soldier, perhaps more than any other patient, dislikes the ordered routine of sanatorium life, particularly when curtailment of exercise or confinement to bed is necessary. Nothing does more to prevent dissatisfaction among sanatorium patients than the provision of suitable employment. Occupational therapy in the form of technical instruction and employment, should be intelligently adapted to the patient's physical and mental requirements in such a way that interest in treatment will be aroused and maintained. Motor-driving and minor repairs, boot repairing, metal work, basket-making, toy-making, wood-carving, joinery, poultry-farming, bee-keeping, pig-breeding, drug and seed growing, and market gardening are suitable forms of occupational therapy which are within the scope of most sanatoriums. Facilities are also necessary for suitable forms of recreation. It is unwise to conduct a sanatorium on lines similar to a penitentiary.—*The Discharged Soldier and Sanatorium Treatment, G. B. Dixon, Brit. J. Tuberc., April, 1920, xiv, 67.*

Chemotherapy of Tuberculosis with Particular Reference to the Cerium Salts Treatment.—The trouble with chemotherapy of tuberculosis is that it is too difficult, and especially it is too slow. The few observations of the inhibitory activity of salts of cerium and some other rare earth metals (especially samarium, neodymium and praseodymium) were made on the growth of tubercle bacilli in cultures, possibly because they are rare substances and had not yet been shown to be valueless in tuberculosis. According to the figures given, the inhibitory action of these salts is not at all high, about one to five parts per thousand being required to prevent growth, which may be contrasted with gold chlorid, which inhibits when in dilution of 1:2,000,000, and yet which in the careful studies of DeWitt, as in the earlier observations of Koch, could not be made to show any favorable influence on tuberculosis in animals. Innumerable substances have a more powerful inhibitory effect on tubercle bacilli than these rare earth salts. Much is made of the reduction of the fat content of the tubercle bacilli grown on mediums containing these salts, the fat being reduced, it is said, from 25 to 40 per cent to 16 to 22 per cent; but we know

of no evidence that such variations in fat content have any significant relation to the virulence of the tubercle bacillus for man. As far as we can learn, no attempts were made to determine the capacity of the salts of the rare earths to kill tubercle bacilli, and there is no report made of any systematic study of their effects on experimental tuberculosis in animals, in which alone accurate controls can be made. We merely have the statement that on the basis of this slight inhibitory effect in cultures, and, what is perhaps more important, a capacity to cause a mononucleosis, a small number of cases of human tuberculosis have been treated with cerium salts by repeated intravenous injections. These cases, less than a hundred in the reports published, have now been observed at most a few months, and it is believed that cutaneous, glandular and chronic afebrile tuberculous pulmonary lesions have been improved, and that patients with active pulmonary tuberculosis have been made worse. There is no mention of control patients given the same general care without the salts. Possibly cerium earth salts help the tuberculous. The evidence so far presented, however, is nothing to get excited about. Many other agencies, now forgotten, have had as much and more reported in their favor at this stage of their history. We cannot find support for the statement of Rénon: "The results obtained by Grenet and Drouin with the sulphate of the cerium earths are certainly the most scientific yet realized in the chemotherapy of tuberculosis." We find much more support for the closing statement of Paul Lewis's address: "Certainly it will be a most unfortunate thing for the progress of tuberculosis research if every substance showing interesting properties in the laboratory is immediately rushed to the clinic regardless of consequences. In this situation patience is to be taken more than usually as an evidence of virtue."—*Editorial, J. Am.M. Ass., July 24, 1920, lxxv, 246.*

Vegetable Proteins in Pulmonary Tuberculosis.—In 20 cases of pulmonary tuberculosis treated with vegetable proteins the results were not uniform, due to the type of cases, the doses and intervals at which the injections were given and to the coöperation given by the patient. The complete history of two of these cases is given. The dose and the time of injection should be carefully controlled; otherwise, the parenchymatous lung reaction may be more than the patient can stand. Institutional treatment in addition would offer the best chances for improvement. As effects of this treatment we may anticipate reduction of cough and expectoration, a lessened feeling of general tiredness and a tendency towards sclerosis. Proteogen therapy is supposed to produce a bactericidal action upon the tubercle bacillus, dissociating its fatty capsule and eliminating the liberated toxins.—*Contribution to the Treatment of Pulmonary Tuberculosis, E. Zueblin, Med. Rec., July 31, 1920, xcviii, 176.*

Treatment of Tuberculosis with Salts of Cerium.—Several French investigators have for eight years been conducting a research on cerium and other uncommon metals in tentative chemotherapy of tuberculosis. Two facts seem to be established, namely, that the salts of the cerium earths reduce the fats of the tubercle bacillus in cultures to which these salts have been added, and that these salts induce a mononuclear leukocytosis in man and animals. Grenet and Drouin selected the sulphates of samarium, neodymium and praseodymium, and report a year's work with the clinical application of these cerium metals. They inject by the vein from 2 to 5 cc. of a 2 per cent solution for twenty days; then stop for fifteen or twenty days, and then give a second and a third series of injections. They summarize details of 8 cases of tuberculous glands; 10 of lupus; 5 of verrucous tuberculous lesions; 8 of erythematous lupus, and 23 of pulmonary tuberculosis. The external tuberculous lesions healed and chronic apyretic pulmonary tuberculosis showed considerable improvement if not an actual cure. The general health improved, the expectoration became less purulent and less profuse, the physical signs became modified and disappeared and the bacilli sometimes disappeared from the sputum or if they were still found in the sputum they showed extremely pronounced modifications and took stains badly. Three guinea pigs inoculated with these modified bacilli, after losing weight for two weeks, had regained their health by the end of two months. A fourth, recently inoculated, shows no signs of disease, confirming the great reduction in the virulence of the bacilli. Will the latent and well tolerated lesions flare up again? Time alone will tell, but the improvement in all seems to be continuing, and the apparent cure has persisted now for several months. The results, such as they are, are very interesting: a direct action on the bacillus, an action on the human organism by favoring the production of sclerosis, perhaps on account of the enormous mononuclear leukocytosis induced. These cerium salts should be used only in the afebrile cases of pulmonary tuberculosis, stopping at once if fever develops. If these precautions are not ob-

served, discredit may be brought on a method which is still in the experimental stage, but which already seems to offer real hope.—*Traitement des infections tuberculeux chroniques par les sels de terres ceriques, H. Grenet & H. Drouin, Bull. d. l. Soc. Méd. d. Hôp., May 7, 1920, xliv, 589.*

Sulphates of Cerium in Pulmonary Tuberculosis.—The Grenet and Drouin method was followed in twenty cases. Progressive improvement will be the rule, when treatment is applied in the early stage without waiting for advanced pulmonary lesions. As the treatment seems to act on the tubercle bacilli alone, it might be advisable to add some medication to act on the secondary infections.—*Résultats du traitement de quelques cas de tuberculose pulmonaire chronique par les sulfates de terres rames, Esnault & Brou, Bull d. l. Soc. Méd. d. Hôp., May 7, 1920, xliv, 606.*

Salts of Cerium Metals in Chemotherapy of Tuberculosis.—Rénon reviews his eight years of research on a large number of salts of not commonly used metals, hoping to find some that would reduce the virulence of the tubercle bacilli in the organism while rendering the soil of the organism less favorable for its development. The sulphates of some of the cerium metals reduce the fats of the tubercle bacillus from 25 or 40 per cent to 22 or 16 per cent. He mentions other salts which induce mononucleosis in man and animals but are too toxic for clinical use. The results obtained by Grenet and Drouin with the sulphates of the cerium earths are certainly the most scientific yet realized in the chemotherapy of tuberculosis. In controlling their results, their technic must be carefully followed, and the warning heeded that in acute forms of tuberculosis no benefit follows and the lesions may even be aggravated. In the five cases he has just begun to treat, the injections are well tolerated and the leukocytosis has run up from 10,000 to 20,000, 26,000 or 40,000 with from 18 to 23 per cent mononuclears.—*Sur la chimiothérapie de la tuberculose par les sulfates de terres rares, L. Rénon, Bull. d. l. Soc. Méd. d. Hôp., May 7, 1920. xliv, 602.*

Treatment of Tuberculosis by Mycoleum.—Mycoleum is a fatty or oily preparation from organisms of the genus mycobacteraceae or the acid-fasts. Its use was begun in 1908. When a tuberculous patient receives it by hypodermic injections his immunity is raised dose by dose to a higher and higher level, until finally there comes a time when he fails to react and is apparently cured. During the first year there is very little change in the patient but as the injections are continued, being given monthly or in very bad cases every three weeks, the patient begins to show improvement. It may take from one to five years for a patient to be cured, but then rarely is a relapse reported. It takes from three to six months to prepare a dose of mycoleum. This is the reason for its scarcity. If the first three doses do not cause a slight reaction, there is no use of giving any further injections. Miliary tuberculosis and tuberculous meningitis do not react except in the early stages. Continued negative reactions at spaced intervals indicate that the disease has been eradicated. Genitourinary tuberculosis without undue bladder contraction yields satisfactorily to mycoleum. Even if long standing chronic cases cannot be cured, it is possible to enable the patient to live in comfort and to support himself and family and feel well enough to enjoy life. In cases of tuberculosis of the bones and joints, it is necessary to administer from six to twelve doses of mycoleum before drastic surgical measures are thought of. In intestinal cases, one may expect to see an immediate subsidence of such symptoms as gas, tenderness, constipation, rigidity, distention and vomiting together with the severe attacks of pain and often fluid in the flanks. The patient can go about his business and take his doses within reasonable limits. Pulmonary tuberculosis has also done well under treatment. Monthly doses are given, among other reasons because in some cases a marked inflammatory local reaction keeps up for two and three weeks. Eighteen cases are reported.—*Treatment of Tuberculosis, Clinical Case Records, B. S. Paschall, N. York M. J., July 17 and 24, 1920, cxii, 95 and 127.*

Tuberculosis Immunity Among Sulphur Dioxide Workers.—With data collected from 38 of the largest industrial establishments in the United States engaged in the manufacture or handling of sulphur dioxide and sulphuric acid, the author arrives at the following conclusions: 1. The percentage of cases of tuberculosis among workers around sulphur dioxide and sulphuric acid is negligible. 2. Sulphur dioxide and the fumes of sulphuric acid appear to act as preventives of tuberculosis and possibly as a cure in incipient cases, with the exception perhaps of fibroid phthisis. 3. The author welcomes additional data from any source along these lines.—*Immunity to Tuberculosis Among Workers in Sulphur Dioxide, F. Tweddell, Med. Rec., August 21, 1920, xcviii, 310.*